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Full Name of Author — Nom complet de l'auteur
Donna L. Wasson

Date of Birth — Date de naissance July 21, 1956	Country of Birth — Lieu de naissance Canada

Permanent Address — Résidence fixe
589 Knottwood Road W.
Edmonton, Alta. T6K1W7

Title of Thesis — Titre de la thèse
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THE EFFECTS OF AN INSTRUCTIONAL PROGRAM ON THE SOCIAL BEHAVIOR OF YOUNG MODERATELY MENTALLY RETARDED CHILDREN IN PLAY

by

©

DONNA L. WASSON

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
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THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled THE EFFECTS OF AN INSTRUCTIONAL PROGRAM ON THE SOCIAL BEHAVIOR OF YOUNG MODERATELY MENTALLY RETARDED CHILDREN IN PLAY

submitted by DONNA L. WASSON

in partial fulfillment of the requirements for the degree of Master of Arts in Physical Education.

Jane Watkinson
Supervisor

Gerard M. Kysela

Date October 7, 1980

ABSTRACT

The purpose of the study was to determine the effects of an individualized instruction program on the social behavior of young moderately mentally retarded children. The study investigated questions pertaining to what to teach, how to teach, and the transfer of training from the treatment program to the free play patterns of the participants.

A free play assessment of eight children using an interval time sampling method showed that mentally retarded children spend approximately 8% of their free play time engaged in social interaction as defined by cooperation and coordination. This compares with the 40% displayed by non retarded children of approximately the same age. Based on the free play assessment, the children were prescribed three social tasks in which they received individualized instruction. Using a multiple probe design across behaviors and replicated across subjects it was determined that the social tasks could be learned by the children. An analysis of the change in level of performance between the initiation of instruction and its termination indicated that the instructional model was instrumental in increasing the children's independent level of performance.

The response prompting continuum used in the Prep Program to teach gross motor skills was modified to include an additional category of contingent attention. This proved to be an appropriate framework through which to shape the social behaviors during instruction.

Using an ABA design, the degree to which the acquired behaviors

generalized to free play was assessed. There were no consistent changes in trend and/or level of social participation displayed during the treatment phase of the study over that displayed during the baseline conditions. An increase in the quantity of social behavior in free play as a result of participating in the instructional program did not occur.

A comparison of the prebaseline and postbaseline distribution of social play across the social interaction categories did show that in 67% of the cases there was an increase in the amount of time spent in the social interaction category that corresponded with the categories of social tasks receiving instruction. There appeared to be a correspondence between the social category under which instruction was received and an increase in that level of social participation during free play.

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CHAPTER I

INTRODUCTION

The Problem

With the recent interest in normalization, the natural habitat of the retarded is no longer necessarily a segregated institution (Porter, Ramsey, Tremblay, Iaccobo, and Crawley, 1978, p. 312). Services are being decentralized as mentally retarded youngsters are being integrated into preschool programs and public school classrooms and developmentally delayed adults are moving into community based group homes and employment opportunities. This movement has placed increasing stress and emphasis on maximizing the social skills of the mentally retarded (Brody and Stoneman, 1977). Whitman, Mercurio, and Caponigri (1970) state that one of the most stiking behavioral deficiencies that distinguishes retarded children from the non-retarded is their absence of social responses.

Social interaction is considered to be a critical prerequisite to much of a child's behavioral development with cognitive development being closely tied to the emergence of social behaviors. This relationship is not clear however. As stated by Lewis, Young, Brooks, and Michalson (1975) at one level cognitive skills are the mechanisms by which the social skills emerge and are applied and yet at another level, the social interactions themselves necessitate and push the development of cognitive skills forward. The essence of the matter is that interaction between children in play involves crucial discrimination, response learning and reciprocal reinforcing interchanges that appear to be necessary for the growth of the child.

Parten (1932) concluded that as children progress through the years of 2 to 5 they spend less time in idle onlooker and solitary behavior and become more involved with their peers by working together on common activities and cooperating during play. Although isolate play is regarded as an important stage in a child's play development (Moore, Evertson, and Brophy, 1974) when it persists over several years to the total exclusion of other children it becomes a problem (Wehman, 1979).

Mentally retarded youngsters have been found to display an excessive amount of isolate play behavior (Capobianco and Cole, 1960; Wasson and Watkinson, 1979). During the period when the normal child is engaging in interactive exchanges and cooperative play endeavours, the retarded child predominately plays independently, set apart from the interaction of others around. There is an apparent lack of incentive or ability to play with other children.

Once a deficit has been uncovered and well documented there remains the task of closing the gap between that which is and that which could be. Inherent in this task is the identification of those social behaviors that are lacking and those that would be desirable, the engendering of those behaviors into the behavior repertoire of the child, and identifying the factors that would maintain the behaviors in their natural environment.

The Prep Preschool Play Program is an experimental program that attempts to teach retarded youngsters play skills that they can apply during free play time (Watkinson, 1977). It was within this program that the present study investigated the question of identifying desirable social tasks, giving instruction for their acquisition and maintaining their existence in free play.

Statement of the Problem

The purpose of the study was to determine the effects of an individualized instruction program on the social behavior of young moderately mentally retarded children. The instructional model was designed to bring about the acquisition of social behaviors between peers using a skilled, cooperating peer during instruction and systematically fading the teacher involvement as the children became more independent in their performance of the behavior.

Through the modified use of the prompting continuum used in the Prep Program the aim of the instructional program was to increase the quality and quantity of social interaction displayed by the children. Instructional materials were written for specific social behaviors believed to be common to playroom settings. The social behaviors were built on the gross motor play skills that the children had acquired in the Prep Program. Participation in the designated social behaviors would not only provide a means by which to interact, but would allow the children to maintain their level of performance on specific motor skills through meaningful practice. To increase the range of social behaviors the children possessed, three social tasks were taught after an initial assessment and prescription.

As the ultimate aim of an instructional program should be to sustain behavior changes outside of the training setting, the children's free play behavior was analyzed to assess the degree to which the instructional program provided the children with the means to apply their newly learned behaviors.

Subsumed within the question of investigating the effects of an instructional program on social behavior are four rather discrete subproblems. The study investigated the following questions:

1. What to teach: were the prescribed social behaviors appropriate for the age of the children, their motor skill level and the environmental situation?
2. How to teach: was the proposed instructional model a functional and efficient approach to teaching socially interactive behaviors?
3. How to teach: were the teacher behaviors as described in the Prep Program for teaching gross motor play skills appropriate for the instruction of socially interactive behaviors as measured by the children's progress?
4. Generalization: was the instructional program effective in bringing about changes in the quality and quantity of social interaction displayed in free play?

Delimitations

The study took place in the Prep Program which is an ongoing research project involving three preschool classes from the Winnifred Stewart School for the moderately retarded. The scope of the investigation was therefore set to include moderately mentally retarded youngsters approximately 4 to 8 years of age. In terms of developmental appropriateness, the curriculum materials could not be appropriately extended far outside the age limitations, although they may be appropriate for different levels of developmental disability.

Although the long range goal of social behavior instruction may be to increase the interaction amongst children in integrated preschool or kindergarten settings, the instructional procedures presented are based on individualized instruction. Group instruction was outside the scope of this investigation, although it is believed to be an area in need of research attention.

The written curriculum materials presented consist of 17 social behaviors, of which only twelve were taught. Some of these behaviors are very specific to the Prep Program equipment (e.g., sharing the tube) and their application may therefore be restricted to the Prep room. Generalized application of these social behaviors outside of the Prep room was beyond the scope of the study, although once again it is an area of great interest in terms of both child and teacher behaviors.

Limitations

The study's generalizability is limited in that the children were not randomly sampled, but represent an intact group, chosen because of their involvement in the Prep Program. The single subject designs incorporated allow for a small sample size, however, due to absences and transportation problems, consistent data on all subjects was not possible. One of the eight subjects missed more than half of the treatment periods.

The most significant limitation to the study was that the children must possess prerequisite motor skills before they can enter into the social behavior instructional program. Of the 17 behaviors, 13 required specific motor skills. The motor skills involved were: jumping down, jumping on a trampoline, sliding down an incline, riding a scooter board, sitting on a swing, swinging on a rope, riding a tricycle, rolling a ball, passing a puck, and throwing and catching. It is not presumed that a child must be motorically skilled before he can exhibit social behavior, but rather that the applied use of motor skills to social situations provides a new situation in which to use old skills and heighten the challenge of the play act.

CHAPTER II

REVIEW OF LITERATURE

Acceptance into play groups, ability to share play things and even successful adjustment into a vocational placement is very commonly determined by the appropriate application of social skills (Gaylord-Ross, 1979). Much of one's learning and cognitive development unfolds within the context of interactive exchanges whether it be with an age mate or someone of fewer or more advanced years. There is little controversy over the importance of social interaction for normal development and successful adjustment into an accepting social network. Much of the current research in children's early peer relations revolves around disclosing the contribution made by child-to-child relations on the basic competencies of language, intellectual development, moral development and social skills (Hartup, 1975, p. 23).

How then does the young child who is socially inept develop and make adjustments? According to O'Connor:

> The preschool isolate foregoes immeasurably significant learning experiences and is quite conceivably acquiring a set for social avoidance which may be maintained over long periods of time, perhaps indefinitely, by the anxiety reducing properties of solitary play. Children with very limited social competence are typically mistreated by their peers, the result being that severely withdrawn children are likely to undergo aversive conditioning when they occasionally hazard interaction with peers (O'Connor, 1972, p. 328).

It is important to bring a withdrawn child out of seclusion and solitary existence. Limited social competence may lead to the reinforcement of interpersonal avoidance with the child becoming dependent upon others to respond first. Social behavior is reciprocal with each person in the exchange acting as a reinforcing agent whether he be the initiator or the recipient of the interaction. This reciprocal nature acts to develop and is necessary to maintain the behavior. A withdrawn child that does not welcome an interactive gesture from another child breaks the reinforcing and maintaining nature of social behavior. It is not long before the child who is reaching out receives enough negative consequences from interactive attempts that the withdrawn child is left to himself.

All people typically are engaged at some point in all levels of social activity, ranging from that which may be termed autistic to highly organized cooperative endeavours. It is not appropriate however, for individuals to frequently engage in activities that are only at one social activity level (Williams, Hamre-Nietupski, Pumpian, McDaniel-Marx, Wheeler, 1978). Assistance should be given the withdrawn child in terms of teaching him to engage in a range of social activities from isolate to cooperative play, at the appropriate time, with the appropriate intensity.

It has been suggested that the appropriate time to begin instruction is at an early age so as to facilitate reentry into the forgiving and accepting groups of childhood (Ross, 1969). Early intervention according to O'Connor (1972), acts as a safeguard against the development of behavioral deficits. Prior to effective teaching however, investigations must be done to disclose the characteristics of normative social behavior. Unfortunately, due to the complexity of the area of social interaction, there has been little consistency in the research. Problems have been repeatedly encountered in defining social behavior. As Eckerman, Whatley and Kutz (1975) state, research data is presented in such molar categories of positive and negative social behavior, that it precludes a description of what actually went on between the children. Further difficulties have been encountered in measuring social behavior. Time sampling, according to Strain and Shores (1977), has been a major falling out in the social research area. They state that researchers view social behavior through a monadic perspective, with discrete responses of individual children being observed and studied without reference to the function of these acts on the peer's behavior.

Efforts are further hampered when it becomes necessary to choose those social behaviors to be taught. Instructed behaviors have ranged from simple greeting responses such as waving, to participating in group table games. The means by which to teach these behaviors has been as diverse as the number of behaviors taught. Techniques used include viewing films, role playing, acting out scenes with puppets, modelling, physical prompting and reinforcement. All these techniques have met with varying degrees of success.

To follow is a brief review of some of the research pertaining to social interaction between young children. The initial section deals with research on non mentally retarded children. This research has set much of the ground work for research with mentally retarded youngsters, which is reviewed in the next section. The final discussion is directed towards efforts made at maintaining behavior changes in conditions outside that of the treatment setting.

Research with Non Mentally Retarded Children

Defining Social Behavior

Since 1932 when Parten did her classic work on social participation among preschool children, researchers have attempted to grasp the essence of social behavior. Parten (1932) after preliminary observations of children at play combined the behaviors observed into social participation categories based on the type of behavior the child was engaged in. The child who was not playing, but glancing at that which was of momentary interest was considered 'unoccupied'. The child who spent most of the time watching the play of others was an 'onlooker'. Solitary 'independent' play involved playing alone with toys independent of other children. When these toys were replaced with those similar to children around him, the child was engaged in 'parallel' activity. Children brought together to play at a common activity where there is no division of labour or organization of the group were partaking in 'associative' play. 'Cooperative' play involved the organization of the group for the purpose of making some material product that the children could not produce alone. This interpretation was still incorporated many years later as a representative means of categorizing the social participation of preschool children (Rubin, 1976; Barnes, 1971).

This seemingly exhaustive description of social behavior was abandoned by O'Connor (1969, 1972) as he simplistically referred to social behavior as any behavior directed toward another child which involved a reciprocal quality. O'Connor cast aside the notion that there existed qualitatively different degrees of social participation.

Similarily Leiter (1977) maintained that the crux of social behavior was its reciprocal quality. In his study of preschool play groups his conceptualization of social behavior consisted of 'initiations' and 'responses'.

The concept of proximity was considered an important component of social behavior to Hart, Reynolds, Baer, Brawley, and Harris (1968). In a case study of a 5 year old girl, social behavior was conceived to possess only two extremes; proximity (i.e., to be within three feet of another child indoors and six feet outdoors) and cooperative play, as defined by specific wagon, sandbox, toy and painting activities.

Kirby and Toler (1970) in a case study of an isolate 5 year old boy viewed social behavior once again along a continuum, stretching from 'no activity' to 'cooperative play'. Verbalization and manipulative motor activity were also relevant social behaviors. This pattern was also evident in the work of Eckerman et al. (1975) and Buell, Stoddard, Harris, and Baer (1968). They identified such social behaviors as watching, smiling, vocalizing and touching.

Mueller and Rich (1976) in their work on socially directed behavior during the second year of life saw social behavior as looking at another child while vocalizing, laughing and manipulating a toy. This giving of attention was also incorporated by Charlesworth and Hartup (1967) as they investigated positive social behavior in nursery school children.

A somewhat more functional distinction was made by Mueller and Brenner (1977) as they defined social interaction according to the purpose of its execution. A distinction was made between a single message-response social sequence and a sustained interaction, with a social interaction being perceived as the organization of formerly discrete socially directed behaviors. Social skill was defined as to the type of contact made between two children, be it direct or with a common object, whether the behavior was directed to bring a single accompanying response, or finally whether a series of socially directed behaviors occurred to produce a social interaction.

Social behavior during the preschool years has been diversely construed. Varying emphasis has been placed on the giving of attention, proximity, vocalization, physical contact and cooperating, although they appear repeatedly throughout the literature. Even with a lack of consistency, these efforts towards providing behavioral definitions of social interaction give a starting point for further studies on origin and function (Eckerman et al., 1975).

Patterns of Social Participation

With social interaction defined, what disclosures have been made about free play social patterns of preschoolers? In Parten's (1932) early work it was concluded that youngsters 2 to 4 years of age spent approximately 39% of their free play time in social interaction. Play behavior of a parallel nature was not included in this percentage. The 39% reflected only that behavior in which one child played with another, be it with or without the organization of the group or the allocation of roles (i.e., association and cooperation).

Barnes (1971) in an attempt to replicate the normative information generated by Parten (1932) concluded that the 1932 play findings were outdated. He found 3 and 4 year old youngsters to interact socially 25% of the time during free play and suggested that people are becoming less socially skilled.

These results were not substantiated by Rubin (1976). In a study investigating the relationship between social participation and role taking, 20 preschool children with a mean age of 3.7 years, spent 38% of their free play time in associative and cooperative play. In a further study by Rubin and associates (Rubin, Watson, and Jambor, 1978) a group of children (mean age of 4.3 years) engaged in social participation 33% of the time. In yet another study, investigating the free play behaviors of middle and lower class preschoolers, (Rubin, Maioni, and Hornung, 1976) it was revealed that middle class children with a mean age of 3.9 years spent 39% of their play time engaged in a social exchange with a peer.

The data suggest that 3 and 4 year old youngsters spent approximately 35 to 40 percent of their free play time engaged in an activity with another child (see Table 1).

Several studies have concluded that social participation is to a large extent dependent upon the age of the children. Parten (1932) found that the younger children in her study spent more time alone or in parallel play than the older childen. In a paper specifically investigating the comparative free play behaviors of preschool and kindergarten children (Rubin et al., 1978) it was revealed that preschool children displayed significantly less associative and cooperative social play than kindergarten children. Preschool children interacted 33% of the time as compared to 42% for kindergarten children (see Table 2).

Table 1

Percentage of Social Play for Subjects of Various Studies

	3 and 4 year olds combined[a]				
Play Category	Parten 1932	Rubin, Maioni, and Hornung 1976	Rubin 1976	Rubin, Watson and Jambor 1978	Barnes 1971
Associative	23.33	29.49	28.14	-	18.92
Cooperative	15.83	9.28	10.12	-	6.48
Total Social Participation	39.16	38.77	38.28	32.91	25.40

[a] The percentages for the Parten (1932) study are not directly comparable as the figures reported by Parten include play scores from some 2 year olds.

Table 2

Percentage of Social Play[a] for Preschool and Kindergarten Children in the Barnes (1971) and Rubin, Watson and Jambor (1978) Studies

Study	Preschool	Kindergarten
Barnes	25.40	42.86
Rubin, Watson and Jambor	32.91	42.43

a. Social play includes associative and cooperative play.

Intervention Strategies

With this knowledge of normative social participation for preschool and kindergarten aged youngsters, efforts have been made towards remediating the deficits that have become evident in some children. The major focus of this research has been increasing the frequency of a specific social behavior that already exists in the child's behavior repertoire. This is done by providing contingent adult attention to the desired behavior. The rationale appears to be that once the child receives a reinforcing consequence for the execution of one social behavior, that the naturally occurring consequences may shape other social behaviors and enhance the occurrence of social participation. In a study by Kirby and Toler (1970) a five year old boy was reinforced by his teacher for passing out candies to his classmates. Teaching one reinforcing behavior produced a behavior trap that increased the amount of time spent in proximity to another and in cooperative play. Caution must be used when interpreting the results however, as the amount of time spent was collapsed into one category to include activities with another child or adult. Buell et al. (1968) applied the same strategy in a case study of a 3 year old girl who spent less than 3% of her time in interaction with her peers. Adult reinforcement contingent upon the child's use of outdoor play equipment produced increases in the rate of free play behavior directed towards other children.

Hart et al. (1968), using a reversal design, demonstrated that teacher attention given to cooperative play activities increased the percentage of time spent in interaction with peers. It was also demonstrated that contingent teacher attention produced more reliable changes than non contingent attention.

Moving away from testifying that teachers can act as a powerful source of reinforcement, Wahler (1967) found that peers could strengthen specific response classes by manipulating their social attention contingencies. Peers were instructed to ignore the subjects during free play unless they exhibited the desired response class, such as cooperative behavior. In an ABA design, Wahler demonstrated that a preschool child's behavior in a free play setting could be brought under the reinforcement control of his peers.

O'Connor (1969) took a rather novel approach to modifying social withdrawl that has not received further attention. Upon identifying isolate children from a nursery school, O'Connor presented a television show depicting eleven sequences of children interacting to an experimental group. A neutral film on dolphins was shown to a control group. After viewing the films the children were observed in free play. The treatment group demonstrated a significant increase in social interactions that exceeded that of a non isolate baseline. The control group showed no change over the pre film viewing assessment. O'Connor (1972) pursued this intervention strategy further in a study investigating the relative efficacy of modeling and shaping procedures in the modification of social withdrawl. Groups of withdrawn preschoolers were subjected to the modeling film used in his 1969 study, a control film, a shaping program or a combined shaping and modeling program. The results demonstrated that modeling produced a more rapid modification in social behavior that was more stable over time than did teacher attention given for increasing approximations of interactive behavior. Both conditions however did produce increased change over that demonstrated by the control group.

All of the reviewed studies strengthened behaviors that were already present in the child's repertoire. Environmental conditions were manipulated to increase the frequency of occurrence of the desired behavior. The utilization of a treatment program based solely on reinforcement procedures however is greatly deficient when it becomes necessary to develop new social responses where gross deficits exist. As O'Connor (1969:16) states, "when gross deficits exist, the reinforcing agent must either introduce a rather laborious set of shaping procedures which requires waiting for the emission of a reinforcable social response, or resort to more active means for establishing the desired behavior."

Research with Mentally Retarded Children

There has been little documentation of the social participation patterns of mentally retarded youngsters. Deficits are known to exist but where the deficits lie and the degree to which they are evident remains somewhat unknown.

The paucity of normative data for retarded youngsters stems, as with research for normal children, from the inconsistencies and varying interpretations of social behavior. Many of the same diversities and problems are evident in research with the mentally retarded youngster as with the non mentally retarded youngster.

Defining Social Behavior

Capobianco and Cole (1960) used Parten and Newhall's (1943) scale of social participation in one of the first investigations pertaining to the social participation of mentally retarded children. The behavioral categories included: unoccupied behavior, onlooker behavior, solitary play, parallel play, associative play and cooperative or organized play. 'Parten-like' categories continued to be used in studies by Paloutzian, Hasazi, Streifel, and Edgar (1971), Mayhew, Enyart and Anderson (1978), and Knapczyk and Yoppi (1975).

To supplement the categories identified by Parten (1932) for non retarded children, Paloutzian et al. (1971) added the categories of 'autistic behavior' and 'attempted interaction'. These lower level behaviors were found necessary so that behaviors that were not yet social as well as incomplete social interactions could be documented. Similar modifications are found in the work by Meyhew et al. (1978). The categories of 'self-stimulation' and 'proximity' were included for the generalization probes. In a 1975 study, Knapczyk and Yoppi, added a category at the upper end of the social continuum. To study the development of higher order social skills in 8 to 10 year old mildly retarded children the category of 'competition' was included.

Contrary to increasing the sensitivity of previously existing measuring devices for use with retarded youngsters some researchers viewed social participation in a more molar light. The lower end of the continuum was abandoned and emphasis was shifted to the part depicting interaction with peers. The fine distinctions made between 'associative' play and the organized interaction of 'cooperative' play were lost. This development was perhaps the result of difficulties encountered in identifying behaviors of low frequency and the subtle qualitative differences in the social play of the retarded child.

Whitman et al. (1970) globally viewed social behaviors as that which occur when one child's behavior becomes mutually or reciprocally involved with a second child's behavior. A novel behavioral code was developed by Strain and Timm (1974). Social behavior was classified into two large behavior categories based on topographical features rather than the function served by the social behavior. Behaviors were no longer described according to the organization of the group and participant status (Parten, 1932) but took the form of positive and negative motor-gestural and vocal-verbal behavior. Social behavior was defined as (Strain, Shores and Kerr, 1976):

> motor-gestural: all movements emitted that cause the child's head, arms or feet to come into direct contact with the body of another child's that involve waving or extending arms directly toward another child, or that involved placing of hands directly upon a material, toy or other movable apparatus that is being touched or manipulated by another child.

This was further expanded by Strain, Shores and Timm (1977) to include a category of verbal behavior:

> vocal-verbal: all vocalizations emitted while a child is directly facing any other child within a radius of 0.9 meters or all vocalizations that by virtue of content (e.g., proper name, hey you, etc.) and/or accompanying motor-gestural movements (e.g., waving, pointing) clearly indicate that the child is directing the utterance to another child with or beyond a 0.9 meter radius.

Both of these interactive behavior categories were coded as being positive or negative in nature, and initiated or responded to. Similar approaches were taken by Peterson, Austin and Lang (1979) and Young and Kerr (1979) in their respective studies on social behavior with severely retarded adolescents and young school aged children.

Researchers have defined social behavior in still other ways. Proximity to other children was important to Mayhew et al. (1978), Porter, Ramsey, Tremblay, Iaccobo and Crawley (1978), and Weisen, Richardson and Roske (1967). Gable, Hendrickson, and Strain (1978) found approach gestures such as waving a child over to join an activity important as did Guralnick and Kravik (1973) and Weisen et al. (1967) find watching or looking at another child worthy of note.

These attempts at capturing that which occurs socially between mentally retarded youngsters, even with their varying degrees of detail and diverse focus, have provided valuable information on the social behavior of young mentally retarded children.

Patterns of Social Participation

Differences do exist between social play displayed by mentally retarded youngsters and their non retarded counterparts. The research shows that retarded youngsters spend an inordinate amount of time in isolate activities (see Table 3).

The normative study of Capobianco and Cole (1960) disclosed that 7 to 12 year old moderately mentally retarded children spent 8% of their free play time in associative or cooperative interaction. This is significantly less than the 35 - 40% found for non retarded children of a younger age. Mayhew et al. (1978) established that severely and profoundly retarded adolescents spent only 9% of their free time in direct interaction with others. A further investigation with 3 to 9 year old moderately mentally retarded youngsters (Wasson and Watkinson, 1979) found the children to be socially interactive only 7% of the time.

Table 3

Percentage of Social Participation[a] for Mentally Retarded and Non Mentally Retarded Youngsters in Free Play

	Capabianco and Cole 1969	Mayhew, Enyart and Anderson 1978	Wasson and Watkinson 1979
Developmentally Delayed	8	9	7
Non Developmentally Delayed	39	25	38
	Parten 1932	Barnes 1971	Rubin 1976

a. Social participation includes associative and cooperative type behavior as defined by Parten (1932).

What to Teach

Based on the documented need for intervention in the area of social participation, a great deal of research has been directed toward increasing the rate of social interaction occurring between mentally retarded peers. The question of what to teach has been met with varying solutions and is closely tied to the problem of defining and measuring social interaction. Strain and Shores (1977:499) state that "the parameters of social participation, particularily 'what to teach' remains essentially unknown although it is clear that reciprocity of social interaction is a critically important factor in developing appropriate affective behavior."

Where should valuable teaching time be spent? Williams et al. (1978) suggest several factors to consider when selecting tasks for social skill instruction. Included was the consideration of the child's present level of social participation. If it is found that the child is functioning at an autistic level, teaching efforts should perhaps be focused at social behaviors low in organization. Reciprocally passing an object may be more appropriate than a cooperative task such as pulling a peer in a wagon. It is also important to match the task with the functioning level of the child. Asking the child to perform at or just above their functioning level keeps participation interesting and acts to pace development. Equally important is to move the child along the social participation continuum, from isolate play, to responding to social initiations, to initiating requests for cooperation.

The incorporation of social participation into motor tasks may be a useful strategy. As Williams et al. (1978) suggest, the learning of rolling, turning or grasping can be revolved around social interaction. A final and significant point is that the social tasks taught be chronologically age appropriate and the curriculum be horizontal as well as vertical (O'Connor, 1969). As the child grows older, age inappropriate social behaviors should be faded and replaced by more appropriate behaviors. A 3 year old waving bye bye is cute, but when this behavior is displayed at an older age, it is quite unacceptable.

Four directions could be pursued in deciding what to teach. A choice could be made to not teach any new behaviors at all, but to build up those that already exist within t[illegible]hild's behavior repertoire. The teacher may further decide [illegible] time focused on only one existing, specific behavior such as rolling a ball to another child, or in turn may concentrate on all behaviors that fall under a certain level of social interaction. Alternately, teacher efforts may be directed towards the building of new behaviors. Again, very specific social behaviors may be shaped, or non specific social tasks that occur within the daily routine of the classroom may be developed and reinforced.

Efforts to refine and increase the occurrence of behaviors that a child can perform independently do not require the use of indepth shaping and fading techniques. This approach is economical in terms of teacher training and time and the structuring of instructional periods. This decision requires that the teacher wait for the behavior to develop devoid of outside assistance however.

Mayhew et al. (1978:165) extended efforts towards determining "if social reinforcement procedures alone could be used to increase the naturally occurring social responses of severely and profoundly retarded adolescents without specific training of any social behavior." Reinforcement was given for proximity to, physical contact with and/or vocalization with a ward attendant. The results indicated that the mean number of social responses did increase contingent upon reinforcement from the ward attendants. Knapczyk and Yoppi (1975) pursued a similar method and reinforced any existing behavior that fell under the defined boundries of cooperative and competitive behavior. In another study, existing behaviors of a general nature were examined as Young and Kerr (1979) asked a moderately retarded peer trainer to try his best to get a severely retarded subject to play with him through verbally asking and the offering of toys. All of these studies reported increases in the frequency of social behavior.

An alternate approach, if social behaviors do not develop, or too much time is being lost waiting for them to unfold on their own, is to teach new behaviors. Time must be spent determining the present level of functioning, deciding on the behaviors to be taught and a method to teach them. Instructing novel behaviors may require that the teacher be skilled in shaping and fading techniques with a great deal of time and effort being required.

Prompting and reinforcement has been used to build non specific social behaviors. This requires that the teacher give systematic instruction in the midst of ongoing activities. Although demanding on the teacher, it does provide a functional setting in which to apply desired behaviors. Peterson et al. (1979) prompted and reinforced behaviors that would normally occur during typical daily activities working with educational materials in a group setting. Strain, Shores and Kerr (1976) through prompting and shaping, taught skills, social in nature, but undefined in terms of specific behaviors.

A more popular approach has been the teaching of specific social behaviors. The understanding is that by giving intensive instruction in one or more behaviors, the child is more socially competent even if the reciprocal nature of social participation does not urge the child to explore other interactive behaviors.

For the most part, the social behaviors chosen for instruction are of simple organization, requiring little motor skill. Rolling a ball back and forth between partners has been repeatedly used (Whitman et al., 1970; Guralnick and Kravik, 1978; Morris and Dolker, 1974; and Paloutzian et al., 1971). Paloutzian et al. (1971) went on to include the more complex and functional social play behaviors of pulling a peer in a wagon, rocking another child on a hobby horse and pushing another child on a swing.

Teaching Models

Teaching models used in the instruction of social skills vary considerably in the amount of teacher involvement (see Figure 1). At one end of the continuum maximum teacher input is required to bring about a social interchange. This teacher input decreases from direct prompting to the training of peer trainers. The teacher's role decreases even further as child to child interactions occur in a group context with the environment being manipulated by the teacher.

In the first teaching model of the paradigm, the child is encouraged to interact socially with an adult, very often a teacher (Ross, 1969; Morris and Dolker, 1974; Mayhew et al., 1978). Social contact of this form is considered a precursor to interaction with

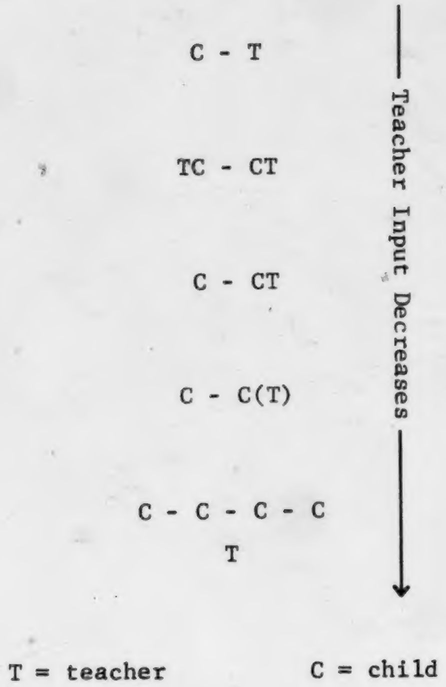


Figure 1. Paradigm of teaching models used in social skill instruction

peers (Eckerman et al., 1975). The second situation is one in which a child is taught to interact with another peer. The initiation and response components of the interaction are prompted by two teachers, one for each child (Whitman et al., 1970; Morris and Dolker, 1974; and Paloutzian et al., 1971).

A third teaching situation that requires less teacher involvement and yet still brings about the desired social behavior is one in which there are two children and one teacher. One child is prompted through a social behavior that is initiated or received by another peer who is cooperative and/or requires less prompting than the target subject (Strain and Timm, 1974; Weisen et al., 1967; and Paloutzian et al., 1971).

A fourth teaching arrangement involves the use of a peer trainer. The peer trainer is taken aside and taught social initiation behaviors to use with the target subject. The teacher is not the direct controlling agent. This approach was used by Strain, Shores and Timm (1977). A non retarded peer trainer was taught to initiate social interaction with a retarded peer. Young and Kerr (1979) expanded on this base and successfully used a mildly retarded child as the peer trainer for a severely retarded child.

A final approach is one in which the teacher manages the environment so that opportunities for social interaction arise within a group teaching situation (Guralnick and Kravik, 1973; and Peterson et al., 1979). In learning ball skills, rather than each child having a ball the teacher may supply one ball for every two children. If the children wish to participate they must share and take turns.

Intervention Strategies

Recent research in the area of teaching social behaviors to retarded youngsters has sought to do so through three main procedures: a) contingent reinforcement programming, b) imitative training, and c) direct shaping and reinforcement.

Contingent reinforcement programming has been used extensively. Mayhew et al. (1978) gave adult praise and social reinforcement to institutionalized adolescent girls in an ABAB design. Each subject received adult attention as a function of her individual rate of social responses, as defined by proximity to, physical contact with or vocalizations towards the adult trainer. The results indicated that the social behavior of the subjects could be systematically increased or decreased as social reinforcement procedures were presented and withdrawn. In a similar study, Guralnick and Kravik (1973) applied contingent and non contingent social and edible reinforcement for desired social behaviors of 6 to 10 year olds. The greatest increase in social behavior occurred under contingent edible reinforcement. Contingent social reinforcement also brought an increase in social behavior over that of the baseline condition, but not to the degree evidenced by non contingent edible reinforcement.

In a token system used with educably mentally retarded 8 to 10 year olds (Knapczyk and Yoppi, 1975) points were given for cooperative and competitive behaviors. They could be banked for a special prize or used to rent games or activities not previously available. The researchers claimed that social and token reinforcement procedures could be effectively used to produce and maintain cooperative and competitive play responses without training.

In two recent studies, the delivery of reinforcement for the performance of the appropriate behavior shifted from being delivered by an adult to being delivered by another peer. Strain, Shores, and Timm (1977) in an ABAB design trained a normal peer to initiate social interaction with moderately retarded children of approximately the same age and socially reinforce them for interacting. The authors concluded that the intervention procedure increased the positive social responses of all the subjects and positive social initiations of 5 of the 6 subjects. Similarly, Young and Kerr (1979) used an educably mentally retarded peer trainer to administer edible reinforcement to a severely retarded child for responding appropriately to the peer trainer's initiations. The peer trainer was cued when to administer the reinforcement by a rap on the window from the experimentor who was viewing the proceedings from behind a one way mirror. At the time when the subject was reinforced the peer trainer also was permitted an edible reinforcement. The study showed increases in the number of peer initiations and responses displayed during the intervention phases.

Imitation training has not received as much attention as the other forms of intervention strategies. Paloutzian et al. (1971) state that if the deficient use of imitation by severely retarded children could be strengthened by building an imitative repertoire, relatively new behaviors could be more easily acquired by merely providing an appropriate demonstration. To test this hypotheses, the researchers gave imitation training on 24 simple motor movements to an experimental group. Upon completing the imitation training, the subjects were trained in social behaviors. A model of the appropriate behavior, such as pulling a peer in a wagon, was given, physically prompted if necessary and reinforced. The researchers concluded that there was a significantly higher level of social behavior in the experimental group over the control group between pre and post testing resulting from the training procedure.

Ross (1969) used a somewhat different approach to imitative training. Educably mentally retarded children, 3 to 10 years old were presented live models, doll play, puppets and film slide presentations of socially appropriate responses to social situations. The researchers concluded that after viewing the various scenes the subjects had improved levels of social behavior.

A 1974 study by Strain and Timm used a unique combination of contingent adult attention and imitation. Using an ABAC design the experimentors during the first intervention phase gave positive adult attention to appropriate social behaviors elicited by the subjects' peers. The second intervention phase delivered specific contingent attention to the subject whenever she was observed emitting or responding to a target response. During the phase when the peers were being reinforced for their social behavior parallel increases in the subjects' behavior occurred, but not to the extent as occurred with direct reinforcement. The non reinforced changes were concluded to be the result of a spillover of social reinforcement inadvertently effecting the partner's response rate.

The studies that have incorporated direct shaping techniques on specific social behaviors have used three and sometimes four teaching behaviors including physical prompting, verbal prompting, reinforcement and in some cases a demonstration of the target behavior. Some studies have made efforts toward defining a physical and verbal prompt, and that which constitutes reinforcement, while others have left it open for the reader to interpret. The complexity of the behaviors receiving instruction may determine the degree to which a description of the exact teaching behaviors are necessary.

Strain et al. (1976) in teaching three preschool boys social responses defined prompting as all physical and verbal activities designed to initiate social interaction, such as moving a child to where other children are playing or moving a child's hands, feet, etc. in such a way that he engages in some ongoing interaction with peers. A similar interpretation was presented by Gable et al. (1978) as they assessed the effects of prompting and reinforcement on the emission of selected social responses. More commonly there is no elaboration of the teaching behaviors, either in terms of description or application.

Demonstrations were employed in some of the research but very often were mentioned only in passing. Strain et al. (1976) on occasion gave a demonstration of the desired behavior, but its application was not systematically incorporated into the instructional model. Morris and Dolker (1974) were more methodical and began each ball rolling training session with a demonstration.

There is little question, regardless of the intervention strategy adopted, of the importance of reinforcement for the performance of a correct response.

The Prep Program, based at the University of Alberta, Department of Physical Education, has done extensive work on the development of teaching behaviors and techniques. Various degrees of physical, visual and verbal prompts have been defined and systematically applied to the instruction of gross motor play skills to moderately mentally retarded youngsters (see Table 4). These teacher behaviors have been placed upon a continuum which accommodates the wide individual differences observed in the motor performance of mentally retarded children (Wall, Watkinson, and Shatz, 1979). The amount of teacher assistance provided is determined by the needs of the individual, with less teacher assistance being offered as the learner becomes more independent in the performance of the skill (see Figure 2).

Williams et al. (1978) have emphasized the importance of providing opportunities for the child to perform skills in the absence of cues from persons of authority. Educational strategies aimed at increasing social behaviors must include teacher reinforcement at the early stages of the program, but in order for the child to develop self sustaining interactions, cues coming from the teacher must be faded. As teacher cues fade, the likelihood of environmental stimuli and reciprocal peer reinforcement taking over control of the behavior is increased. The Prep Program has attempted to catch this process through the No Prompt category. Without verbal, physical or visual cues, but by carefully structuring the play situation, the equipment arrangement or enticement of a peer demonstration signals the child to complete the behavior.

Generalization

A frequent criticism of behavioral research has been its failure to produce a transfer of trained behavior to environments similar to that of training but never previously experienced (Wehman, Abramson,

Table 4

Prep Program Response Prompting Continuum

Physical Prompt	Complete Manipulation Manipulative Prompt Minimal Guidance
Visual Prompt	Complete Skill Demonstration Partial Skill Demonstration Gestural Prompting
Verbal Prompt	Skill Cue Skill Mand Action Cue
No Prompt	Initiation with Environmental Goal Imitative Initiation Initiation in Free Play

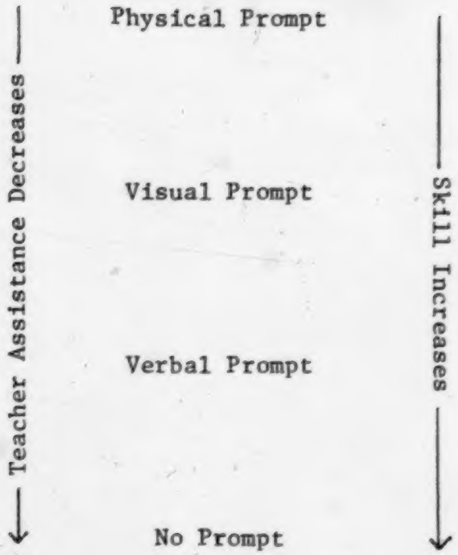


Figure 2. Prep program response prompting continuum

and Norman, 1977). According to Baer, Wolfe, and Risley (1968) a behavioral change may be said to have generality if it proves durable over time, if it appears in a wide variety of possible environments or if it spreads to a wide variety of related behaviors.

It is now being accepted that generalization is no longer a passive phenomenon that is a natural outcome of any behavior change process. Stokes and Baer (1977) suggest that previously, if generalization was absent, it was assumed that the teaching process had managed to maintain unusually tight control of the stimuli and responses allowing little occurrence of the behavior elsewhere. The critical question now is to identify procedures which may be used to effectively modify a learning situation such that the target behavior occurs in diverse settings (Wehman et al., 1977).

Stokes and Baer (1977) have documented the techniques used in the literature to assess generalization. The first category, 'train and hope' involves documenting generalization after a behavior change has been effected, but not actively pursuing it. Such studies document the generalization limits of particular intervention techniques and provide a base for generalization programming.

Mayhew et al. (1978) probed for generalization after effecting an increase in social behavior through a contingent reinforcement program. The behavior increase was not evident in a non experimental condition and the researchers concluded that generalization is not an inevitable by-product of the training process. Similar findings were reported by Morris and Dolker (1974). Generalization to a person other than the tester did not occur for a ball rolling task. In contrast Peterson et al. (1979) found that physically prompting and reinforcing behaviors of a motor-gestural and/or vocal-verbal nature resulted in a substantial increase in social behavior during non training conditions.

A second category identified in generalization programming is that of 'varying stimulus conditions' (Wehman et al., 1977). This procedure increases, during training, the number and type of stimuli which set the occasion for the desired behavior. Whitman et al. (1970) applied this method with ball rolling between 2 severely retarded children. After the two target subjects became proficient at the task two additional peers were introduced so that they performed the target behavior with the two original subjects. With no systematic reinforcement program the original subjects generalized their behavior to other children during non training times.

A third method has been termed 'use of indiscriminable contingencies' or the 'fading of contingencies'. Intermittent schedules of reinforcement have been repeatedly shown to be resistant to extinction and hence regarded as a form of generalization (Stokes and Baer, 1977). The essential feature of intermittent schedules is their unpredictability. It is difficult to distinguish reinforcement occasions from non reinforcement occasions. Kazdin and Polster (1973) demonstrated the successful use of intermittent reinforcement in delaying the extinction of social interactions between retarded adults. During the second treatment phase of an ABAB design one subject received continuous reinforcement while another received intermittent reinforcement. During the extinction period only the subject on the intermittent schedule continued to interact socially.

A final category has been referred to by Stokes and Baer (1977) as 'train to generalize'. In this approach, generalization is considered a response and is contingently reinforced for its occurrence. A drawback of this method is that intrinsic reinforcement for performing the behavior becomes secondary. In a study by Gable et al. (1978) reinforcement was given for all target behaviors as they occurred during the generalization training sessions. Social behaviors were shown to be significantly higher during generalization sessions than the baseline condition.

In reviewing 14 articles which applied intervention techniques to increase the social behavior of mentally retarded persons, less than half reported an assessment of generalized effects of their treatment. Of these 5 articles, 3 reported positive findings and 2 reported negative ones.

The literature suggests that more often than not generalization of treatment behaviors occurs whether planned procedures are implemented or not. Stokes and Baer (1977) suggest that this may not be the case. The preponderance of positive data may be the result of researchers not reporting the absence of generalization for fear that it may reflect a deficiency in their procedures.

That generalization can be something that occurs without being produced by specific procedures is valuable. It is heartening to know that not all responses require attention in all settings across time. However, generalization is not always evident. Very often the naturally occurring consequences in the environment are not enough to maintain a new behavior without a support system that can be faded out. Too often it is assumed that once the child learns a social behavior that he is 'trapped' into a self perpetuating and reinforcing situation that will expand his social skills.

Gable et al. (1978) emphasize two objectives in the teaching of social interaction:

1. training should focus on the development of social responses which allow the subject to engage in interaction, and
2. training should focus on bringing these behaviors under the stimulus control of peer's behavior.

CHAPTER III

METHODS AND PROCEDURES

Design

The purpose of the study was to investigate whether the application of an instructional program would bring about the attainment of specific interactive behaviors and whether a subsequent generalized application of these behaviors would occur in free play. In order to assess the efficacy of the instructional program two single subject research designs were employed, a multiple probe design and reversal time series design (e.g., Risley and Wolfe, 1971, p. 181).

In order to investigate whether specific playroom social behaviors could be systematically and successfully instructed, the multiple probe technique, a variation of the multiple baseline, was utilized (Horner and Baer, 1978). To discover whether the instructional program produced subsequent changes in the children's social participation with peers during free play, a simple time series ABA design was incorporated (Birnbrauer, Peterson, and Solnick, 1974; Kratochwill, 1978, p. 41).

Population and Sample

Population

The population of interest included those youngsters who have achieved or are in the process of achieving the fundamental gross motor skills required to make productive use of free play. The study focused on young moderately mentally retarded children who were competent in the performance of such skills as tricycle riding, jumping down and sliding. The approximate age to which a program such as this would be appropriate is 4 to 8 years.

Participants

The subjects of the investigation were 8 participants of the Prep Program which is sponsored by the Department of Physical Education at the University of Alberta. It is an experimental program designed to develop and implement program materials in gross motor play skills. The program also serves as a demonstration centre to local institutions, provides practical experience for undergraduate Physical Education students and acts as a direct service to the children (Watkinson, 1977). The children came from the early education classes at Winnifred Stewart School for Retarded Children in Edmonton, Alberta, to attend the Prep Program twice weekly for one hour sessions.

There were 6 boys and 2 girls involved and at the initiation of the study they ranged in age from 6 years to 9 years, 6 months with a mean of 7 years, 4 months (see Table 5). The children displayed no physical abnormalities, were ambulatory, and possessed variable degrees of language competence. All the children lived at home with natural or foster parents and attended Winnifred Stewart School during the day.

The children had been participating in the Prep Program for four months prior to the start of the study, which ensured that they were familiar with the facility and program routine.

The eight subjects selected from the group of fifteen that attended the Prep Program were chosen primarily for their regular attendance. Length of time in the Prep Program was also considered,

Table 5

Characteristics of Program Participants

SUBJECT	DATE OF BIRTH	AGE	DIAGNOSIS
1	3/29/72	7 yrs. 10 months	Down's Syndrome
2	1/30/74	6 yrs. 0 months	Down's Syndrome
3	6/6/72	7 yrs. 8 months	Down's Syndrome
4	9/21/73	6 yrs. 4 months	congenital abnormalities
5	1/3/73	7 yrs. 1 month	etiology unknown
6	7/5/73	6 yrs. 6 months	etiology unknown
7	9/13/72	7 yrs. 6 months	Down's Syndrome
8	8/9/70	9 yrs. 6 months	brain damage

however. It was decided that those youngsters who, over the past two or three years, have had difficulty in achieving progress in the Prep Program due to resistance to instruction or behavioral difficulties be excluded from the study. The limited time available for instruction made this decision necessary although regrettable. The children who fell into this category and those with irregular attendance due to illness or transportation difficulties did however receive the same treatment package as the subjects of the study. Their presence and cooperation was invaluable for they acted as cooperating peers throughout the course of instruction.

Treatment

The children participated in the study two mornings per week from January 16th to May 9th, 1980 with the exception of a one week break in February during the University's 'reading week' and one week in April for the school system's Spring Break. In total the investigation encompassed 31 instructional days. This 15 week period was broken down into one week of infield observation training for the observers, two weeks of baseline data collection, ten weeks of assessment and teaching intervention, followed by a return to baseline for the final two weeks.

The approximate daily timetable for the study was as follows:

9:50 - 10:00 a.m.	Children arrived.
10:00 - 10:30 a.m.	Free play and individualized instruction for the study subjects; free play and cooperative peer activity for the non study subjects.

10:30 - 11:00 a.m.	Free play for the study subjects during which observations were taken; free play and individualized instruction for the non study subjects.
11:00 - 11:10 a.m.	Children prepared to leave for school.

The fifteen children who attended the program were divided into a study and non study group. They were initially identified by color coded felt dots that were pinned to their backs. All the children in the program received individualized instruction in free play. The experimental subjects were instructed during the first half hour, and left to play freely for the second half. The non experimental children were left to play freely during the first half hour, assisting in instruction by participating as a cooperating child when requested, and given individualized instruction during the second half hour either in social tasks or motor skills.

To prevent the weakening of the experimental design by producing premature changes in behavior, the teachers chose non study subjects to act as cooperating peers during the first half hour of instruction. During the second half hour the social behaviors of the study subjects were observed and recorded in free play. While the study subjects were being observed in free play the non study subjects received individualized instruction on social tasks. The teacher did not however choose experimental subjects to act as cooperating peers, but taught the skills amongst the non study subjects. While this appeared practical, functionally it created problems. There were not a sufficient number of non study children with the prerequisite motor skills required to teach the various social tasks, resulting in time being spent waiting for children to come available. As this situation became apparent, upon the teachers' suggestion, it was decided that the non study subjects could continue instruction in social behaviors or revert to motor skill instruction in accordance with the Prep Program (Watkinson, Hunt, Lovell, and Medak, 1976).

The teachers who carried out the instruction were four undergraduate students from the Department of Physical Education, University of Alberta. All the teachers were familiar with the Prep Program model and the children participating in the program. Three of the teachers had three months experience assessing, prescribing and teaching motor skills to the subjects. The fourth teacher had an additional two months of experience. All the teachers received training in the use of the social instruction model and response prompting continuum prior to the initiation of the study.

The free play data were collected by three observers, two graduate students in Physical Education at the University of Alberta and the investigator. The observers also received training in the behavioral categories prior to the initiation of the study.

The playroom setting consisted of a large room permitting the free execution of gross motor play activities. Numerous pieces of large and small equipment were available to the children at all times. For the purpose of the investigation the equipment was grouped into 12 major categories including: bars, benches, climbing apparatus, cubes, free space, hanging equipment, mats, scooters, slides, small equipment, trampoline and tricycles and wagons. For a complete list of the play materials comprising the 12 categories see Appendix A.

The tricycles deserve special mention. Because they were so highly valued by the children, if left accessible for the whole period the children would spend the vast majority of their free play time on them. This also disrupted teaching for the children in many cases refused to leave the tricycles to participate in other activities. As a result the tricycles were removed from storage for 15 minutes during instructional time and 15 minutes of free play time.

Teacher Training

Because this project was an extension of the Prep Program, the teaching model, assessment procedures and teacher behaviors used during instruction were very similar to that with which the teachers were familar.

During the month of January six one hour training sessions were held. In the introductory session an overview of the project was presented, the teachers' responsibilities were explained and the order of events for the next three months defined. Written materials consisting of the sequencing of social interaction instruction, the response prompting continuum, interaction categories, and equipment categories (Appendix A) were distributed and the observers were asked to familiarize themselves with the materials. Further sessions consisted of discussions about this information and presentation of additional materials including guidelines to adhere to when prescribing social tasks, the procedures to follow during assessments, and how to transpose the raw data onto graphs (Appendix A).

Following the initiation of the instructional program the investigator met with the teachers twice monthly to discuss topics of concern.

Observer Training

Approximately 10 hours of observer training were carried out prior to baseline data collection. The first week involved becoming familiar with the written materials with the second consisting mainly of applying the materials to the observational setting.

The first of eight sessions consisted of an orientation to the research project with the following written material being distributed: the sequence of social interaction instruction, the response prompting continuum, the interaction categories, the equipment categories, (Appendix A) and social interaction/equipment matrix (Appendix B). The next session consisted of discussing the presented materials, studying the rules required to code the behaviors (Appendix A) and coding hypothetical examples of social interactions.

During the next two sessions the observers as a group simultaneously coded 10 second videotaped samples of young moderately and severely retarded children in free play. Disagreements were discussed immediately after each sample. This continued into the third session but with the discussion occurring after the agreement and disagreements had been tallied.

The last three days of the training were spent in the Prep Program doing live observations using the same observational techniques that were used for the actual data collection as suggested by Mash and McElwee (1974). At the end of the three days the criterion of 70 percent agreement on the social interaction categories had been reached (Kazdin, 1977; Johnson, and Bolstad, p. 25, 1973). Based on this achievement and time constraints, the training period ended and the observers moved on to collecting the actual data. Often before the children arrived, a few minutes were spent by the observers reviewing the critical delineating phrases of the social interaction categories and discussing difficulties encountered. In addition, throughout the study the observers received feedback about their observation consistency (Johnson and Bolstad, p. 10, 1973) in the form of percentage agreement against the criterion observer after each observational session.

Program Model

The program model for the instruction of social behaviors finds its basis in the Prep Program Model of motor skill instruction (Watkinson and Wall, 1980) as outlined in Figure 3. This individualized instruction model was modified slightly to accomodate the teaching of social tasks and is characterized by six processes (Watkinson, 1977) as shown in Figure 4. These processes include:

1. A free play assessment of each child's social interaction competencies.
2. Prescription of 3 social behaviors based on social interaction deficits and equipment preferences identified during assessment, as well as the play skill competencies of the child.
3. Identification of the response level the child performs the prescribed behavior at.
4. Individualized instruction on the prescribed task.
5. Monitoring of the individual child's progress during instruction, with an ongoing evaluation of the previous steps.

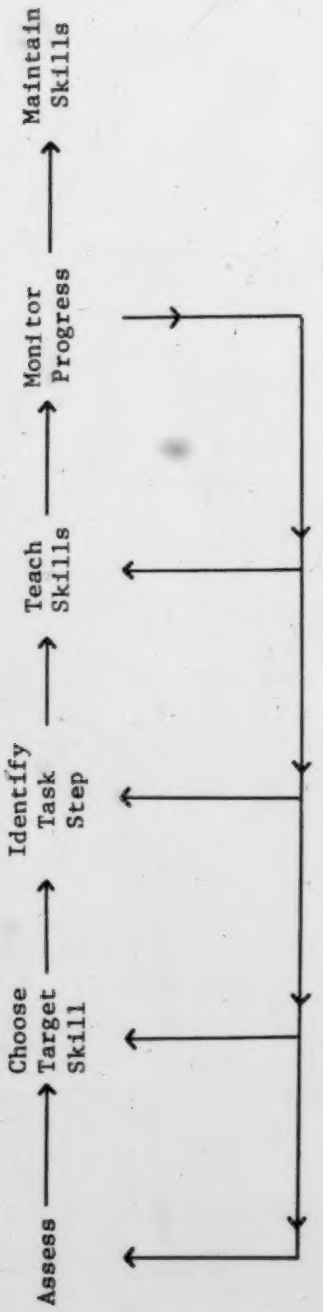


Figure 3. The Prep Program model

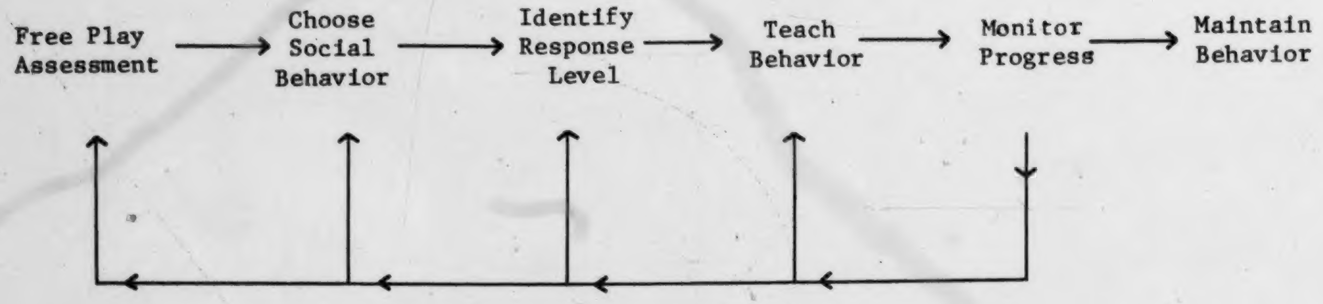


Figure 4. The social interaction instruction model

6. Periodic checking of the behavior after it has reached the desired level of performance in efforts to maintain the behavior at the instructional level during free play.

Although the teacher brought together two children for the purposes of instruction, her attention was on the instruction of only one of the two children. It was necessary therefore that the other child be willing to cooperate in the interactive exchange and that both the children possessed the necessary prerequisite motor skills encompassed in the social task. As it was the social interaction that was the focus of instruction and not the acquisition of motor skills, it was important that the teacher's time was not spent prompting the motor skill but that it was spent on the interactive exchange.

Ideally, the children freely played at the level of social interaction at which they were most comfortable, with the individualized instruction on the prescribed behaviors being interspersed during sensitive moments. Such sensitive moments included times when two children were in close proximity to a piece of equipment but not using it in an interactive manner, when a child was idly engaged in an activity judged to be of low sophistication, or when an activity was hampered by a lack of social cooperation on the children's part. There were times however when waiting for sensitive moments was not practical and the interruption of a child's play was necessary for the purposes of instruction.

The program model of intense individualized instruction during free play is designed to provide the needed instruction and self initiated free play practice to cause behavior to be overlearned and included in the child's behavior repertoire.

The teaching of social tasks within the Prep playroom provides an adjunct to the Prep Program. The Prep Program strives to bring about a desirable behavior change, and to maintain that level of performance during free play. Through the learning of social tasks many of the previously learned motor skills can be practiced and maintained incidentally in a structured setting. Previously learned motor skills were maintained by applying them in a new context of peer interaction, giving their execution a more functional and normative end. The model provides an attractive and meaningful setting in which to utilize previously learned skills.

Assessment

Before an accurate prescription of those social behaviors that would be most appropriate to teach could be made, an assessment of the child's present level of social interaction was necessary. The initial portion of the study was therefore concerned with determining where the children spent their socially interactive time as defined by four social interaction categories and subcategories and one negative category (Figure 5; see Appendix A for complete definitions). These categories were formulated from a pilot study which investigated the social behaviors that occur between moderately retarded children (Wasson and Watkinson, 1979).

Concurrent with the assessment of the children's level of social interaction in free play the pieces of equipment in the playroom with which they interacted were also recorded. This information was incorporated into the prescription of the social tasks in that those tasks involving favoured pieces of equipment were given priority.

1. Compliance With Association
    - 1.1 maintains activity
    - 1.2 complies with physical contact
    - 1.3 complies with assisting
2. Association
    - 2.1 physical contact
    - 2.2 assisting
3. Cooperation
    - 3.1 taking turns
    - 3.2 sharing
    - 3.3 leading/following
4. Coordinating
5. Negative Behavior

Figure 5. Social interaction categories and subcategories

Prescription

After the initial assessment of the free play time was completed, the teachers prescribed three social tasks for each child. Given the free play information from the baseline data, knowledge of the children's motor skill performance from a Free Play Inventory (Appendix B), prescription guidelines and a list of possible social interaction tasks, the choices were made.

The prescription guidelines were prepared (Appendix A) to assist in making an appropriate decision as to the social tasks that should be taught. In brief the guidelines suggest:

1. if a child predominately preferred social interaction that was at the lower end of the social continuum, for example 'maintains activity' the activity chosen should be of a somewhat more complex nature - e.g., assisting.
2. choose a social task that incorporates the pieces of equipment the child enjoys using.
3. if there was a predominance of negative behavior associated with one piece of equipment, choose a social task that would likely decrease the need for negative interaction.

The three prescribed tasks were chosen from a list of 17. Of these 17 behaviors, 12 were prescribed and taught (Figure 6). The social interaction tasks were conceived and written by the teachers during the initial month of the program when teacher interaction with the children was minimal. The social tasks include those that would readily be found in a playroom setting and would be worthy of instruction (Appendix C).

Compliance with Association

Jumping down holding hands

Jumping on trampoline holding hands

Sliding down slide together

Association

Pushes another child on the swing

Cooperation

Sharing the scooters

Sharing the tube

Sharing the tricycle

Leading/following on the tricycles

Coordination

Riding on the back of a tricycle

Pedalling a tricycle with a passenger

Rolling a ball between partners

Passing a puck between partners

Pulling a child in a wagon

Figure 6. Prescribed social interaction tasks

Instruction

Each teacher attempted to spend a minimum of five minutes of instruction, or two teaching episodes per child, per day on the prescribed tasks. Each task was instructed in accordance with the Instruction Model presented in Figure 7. The first level of the model represents the lowest level of initiation on the part of the child making it necessary for the teacher to physically prompt the child. As the child begins to initiate the behavior the teacher then prompts the social exchange using visual cues in combination with verbal cues. As the child increases his/her independence, teacher involvement decreases such that verbal prompting is used to bring about the desired behavior. As the point of self initiation is reached with the aid of environmental goals and imitative initiation situations (i.e., no prompts) the teacher's role is further decreased so that teacher behaviors consist of feedback and reinforcement. This input is further reduced so that contingent upon the initiation of the desired behavior the teacher delivers reinforcement and feedback only. Even this is finally faded as the behaviors are initiated outside of the contingencies imposed by the teacher. Complete explanations of the teacher behaviors at the various response levels can be found in Appendix A.

The response prompting continuum (Figure 8) is a modification of that used in the Prep Program for teaching motor skills (Watkinson and Wall, 1980). The category of contingent attention was added for the purposes of this study. The systematic fading of teacher involvement from physical prompting through to contingent attention was designed to decrease the child's reliance on the teacher and move him towards initiating the behavior in free play.

LEVEL	INSTRUCTIONAL MODEL	RESPONSE LEVEL
1	TC - C	Physical Prompt
2	C - C T	Visual Prompt
3	C - C (T)	Verbal Prompt
4	C - C	No Prompt
5	C - C	Contingent Attention
6	C - C	Initiation in Free Play

Figure 7. Sequence of social interaction instruction

PHYSICAL PROMPT	Complete Manipulation
	Manipulative Prompting
	Minimal Guidance
VISUAL PROMPT	Complete Behavior Demonstration
	Partial Behavior Demonstration
	Gestural Prompting
VERBAL PROMPT	Behavior Cue
	Behavior Mand
	Action Cue
NO PROMPT	Environmental Goal
	Imitative Initiation
CONTINGENT ATTENTION	Continuous
	Intermittent
INITIATION IN FREE PLAY	

Figure 8. Response prompting continuum

Evaluation

Records were kept daily by the teachers on a Daily Record Form (Appendix B) which indicated the response level used during instruction, and the number of times the response was completed and/or the length of time spent in instruction.

From the Daily Record Forms the information was transposed onto graphs (Appendix B) at the end of each week. The most typical performance demonstrated by the child each day was plotted (see Appendix A for the Graphing Code). The graphed information permitted the teachers to determine the overall progress of the child on each task, and assisted them in making decisions regarding instructional strategies (Watkinson, 1977).

Single Subject Design

Two single subject designs were used to answer the question of whether social interaction tasks could be taught and whether this instruction would further result in changes in social behavior in free play. Single subject designs were chosen as they give a representation of individual subject's responses to the treatment variable which may vary from the average change for all the subjects as a group (Sulzer-Azaroff and Mayer, 1977, p. 444). As the teaching model used in this investigation was based on individualized instruction, it was important to see how each individual responded to instruction. Furthermore, the effects of the treatment variable may be monitored throughout the treatment, providing the opportunity to make improvisations during the course of investigation if necessary (Kazdin, 1973). As Neale and Liebert (1973, p. 157) point out, although significant differences in behavior may be seen between two groups, some of the individual members of the group may fail to show improvement. With the individual examination of the treatment effect of each child ineffective techniques can be modified to aid in improving all the children's skills.

A significant advantage of the single subject design is that it minimizes one of the strongest confounding factors in behavioral research - variability due to individual subject differences (Sulzer-Azaroff and Mayer, 1977, p. 445). A comparison is made between an individual's behavior under one condition and under others.

Single subject research, although valuable in applied work, must meet 4 criteria (Birnbrauer, Peterson, and Solnick, 1974) to conclude that there is a functional relationship between the treatment applied and behavior change observed:

1. data must be recorded reliably,
2. data must be recorded repeatedly,
3. procedures must be described in sufficient detail to permit replication, and
4. the effects of the procedures must be replicated.

The following discussion will confirm that the criteria have been satisfactorily met.

Multiple Probe Design

The multiple-probe design (Horner and Baer, 1978) has been used little in the literature. Cuvo (1979) points out that the use of multiple probing has many advantages over the measurement and procedural constraints of the multiple baseline and has not been given adequate consideration, especially by those researchers working in the area of instruction.

The main features of the multiple-probe technique as applied to this study were:

1. an initial assessment or probe was conducted to determine the level of performance the child demonstrated for each of the three social behaviors assigned.
2. administration of the instructional program to the first of the three target behaviors, with no instruction being given to the other two.
3. an additional probe session was conducted on all three of the target behaviors before instruction began on the next social task.
4. with instruction continuing on the first behavior, the instructional program was administered to the second of the three behaviors.
5. steps 3 and 4 were continued until all three social behaviors had received instruction.

Rationale

The multiple-probe technique provides a procedure for demonstrating a functional relationship between an independent variable and the acquisition of a behavior (Horner and Baer, 1978). The use of probing replaces the need to continuously measure the baseline condition as with the traditional multiple baseline (Baer, Wolfe and Risley, 1968) when measuring extended baselines is reactive, impractical or a strong a priori assumption of stability can be made (Horner and Baer, 1978).

Assessment of the child's performance in the present study for a continuous baseline would violate all three conditions. Continuously assessing the child's level of performance would produce a reactive effect as each assessment rudimentally resembles a teaching episode. The child was asked to complete the behavior with varying degrees of assistance contingent upon his response (see Assessment Procedures, Appendix A). Secondly this technique is impractical in that the teachers could realistically be devoting as much time to the measurement of baseline as they could be to meaningful instruction. On the third count, it can be reasonably assumed that the child's level of performance on the tasks would be stable displaying no upward or downward trend. This assumption is based on the results of several studies demonstrating that mentally retarded children in unstructured settings did not demonstrate increased levels of social behavior in the presence of non-developmentally delayed models (Peck, Apolloni, Cooke, and Raver, 1978; Strain, Shores, and Timm, 1977; DeVoney, Guralnick, and Rubin, 1974; Peterson and Haralick, 1977).

Cuvo (1979) advocates the use of minimal baseline, for long periods of assessment can create an extinction paradigm. Alternately he suggests that all subjects and/or behaviors be tested at the outset of the experiment to provide an initial baseline and that testing be done once again immediately before entry to the treatment phase of the experiment.

Internal and External Validity

The multiple probe technique, a variation of the multiple baseline, is assumed to possess the same strengths and weaknesses with respect to the internal and external validity as the multiple baseline. According to Kratochwill (1978, p. 18) the internal validity of the multiple baseline design across behaviors is possibly threatened by history, maturation, testing, instrumentation, instability, change in unit composition, and reactive intervention (cf. Gelfand and Hartman, 1975, p. 77).

History could plausibly cause a confounding effect with the treatment, although three months is a short period of time for an event to occur to most of the subjects that would produce the desired change in behavior over the individualized instruction model. By using repeated measurement, history is to some degree controlled, for an event that affected a majority of the subjects would most likely be reflected as uncharacteristic behavior. Because the study ran on approximately the same daily schedule as the Prep Program and all students were present for the school term, the effects of prior history were held somewhat static. For the same reasons, invalidity based on maturation was of modest concern.

As only three assessments were performed over the course of the study, confounding due to testing was not a strong threat. There was approximately a one month time interval between assessment sessions, which would further reduce the significance of testing (Kratochwill, 1978, p. 14).

The weakening of internal validity caused by instrumentation effects was controlled by checking the reliability and consistency of the teachers' instruction and recording procedures. The teachers were randomly checked on their recording of teaching once a week, approximately 15% of their teaching episodes, by two of the observers. A teaching episode was observed and the teaching behaviors noted. Discrepancies found between that which was observed and that which was recorded were discussed. This process ensured that the teaching behaviors for each social task were being adhered to (Appendix C) and that the recorded information was a true representation of that which transpired during the teaching episode. In 92% of the cases there was congruence between the teacher's recorded prompt level and the observer's observations.

The threat to internal validity caused by instability or variability of the results is a possible weakness. Variability of performance is characteristic of the retarded population (Baumeister, 1968) which makes a within individual comparison of behavior under different conditions necessary and effective.

Changes in the experimental unit composition due to attrition did not pose a strong rival hypothesis. A subject's absence did not change the composition of the group. The child received individual instruction on individually prescribed tasks.

Reactive intervention did not pose a strong threat to internal validity as the baseline and intervention phases of the study were primarily on a time line schedule. The deliberate application of the intervention at times when the data were at extreme values did not occur.

External validity, according to Kratochwill (1978, p. 11) involves the extent to which the results of an investigation can be generalized to other groups and settings. In terms of population considerations the results from this study and most single subject investigations are of unknown generality (Birnbrauer, Peterson, and Solnick, 1974).

Generality of results is best tested through intersubject replication where the reliability of previous findings and generality to other conditions are tested (Kratochwill, 1978, p. 22; Birnbrauer et al., 1974).

The extent to which the applied intervention could be used to produce similar results, or generalize to other environmental conditions is determined for the multiple baseline designs by 10 different factors (Kratochwill, 1978, p. 28). They are as follows: a) describing the independent variable explicity, b) Hawthorne effects, c) pretest sensitization, d) posttest sensitization, e) interaction of time of measurement and intervention effects, f) interaction of history and treatment effects, g) novelty or disruptive effects, h) experimentor effects, i) measurement of the dependent variable, j) referent generality.

As the independent variable has been explicitly described and the children were not aware that they were partaking in an investigation outside of regular Prep Program participation, invalidity due to an explicit description of the independent variable and the Hawthorne effect are minimal. In terms of pretest sensitization although the children were given a performance assessment on the prescribed social tasks prior to instruction this would give little intervention sensitization as the assessment was performed only once and was of short duration. As no posttest was performed, posttest sensitization was of no concern. The external validity threat of interaction of time of measurement and intervention effects was slight as teaching performance was recorded each day of the program providing ample measurement for the intervention to reliably show or not show an effect. For this same reason the interaction of history and invertention effect threat was low as a history effect would have surfaced over the repeated measurements.

The referent generality of the study is somewhat low. The conceptualized outcome of the investigation is narrow, looking only at whether the prescribed social tasks were appropriate, whether the instructional model and teaching behaviors were efficient and whether instruction would produce changes in free play social participation.

Definite weaknesses to the ecological validity of the study are found with novelty and disruption effects, experimenter effects, and measurement of the dependent variable. As Kratochwill (1978, p. 26) pointedly states however, the longer the intervention occurs over time and with repeated measurement the effects of novelty and disruption counterbalance. Experimenter bias is acknowledged as a potential threat to ecological validity in that unintentional behavior may have altered the subjects' behavior or that of the observers such that the results could not be replicated. This effect is somewhat reduced in that the obtained instructional results were generated by four teachers acting independently.

The measurement of the dependent variable is deemed reliable in that the teacher behaviors were operationally defined for each behavior receiving instruction.

The validity of the instrument was assumed as the response prompting continuum, although modified for this study has been successfully utilized in studies relating to gross motor play skills (Watkinson, 1977; Shatz, 1979).

Instrumentation

The specific teacher behaviors used to elicit an appropriate response from the child for each social task (Appendix C) were recorded according to the response prompting continuum (Appendix A). The child's performance was recorded as initiated, performed under the no prompt category of contingent attention or environmental goal, or performed with the assistance of the teacher through verbal, visual or physical prompts (Figure 8). The definitions of the categories and subcategories can be found in Appendix A. These daily records were transformed onto graphs (Appendix B).

Three probe sessions occurred prior to the iniation of instruction of a social task. The children were assessed according to the Interaction Behavior Assessment (Appendix A). This was a criterion referenced measurement device used to indicate the child's level of performance on those social tasks about to receive instruction. The child's behavior fell into one of five categories: verbal prompt, visual prompt, minimal guidance, manipulative prompt, and complete manipulation. The probe indicated to the teacher where to begin instruction.

Treatment of the Data

The teaching data and assessment probes were transcribed onto graphs and subjected to visual analysis (cf. Michael, 1974; Parsonson and Baer, 1978, p. 113). The graphic representations were assessed according to trend, level, and variability of performance between and within phases (Glass, Willson, and Gottman, 1975; Kratochwill, 1978; Jones, Baught, and Weinrott, 1977).

ABA Time Series Design

To assess the efficacy of the intervention program in bringing about behavior changes in the children's social participation in free play an ABA design was incorporated (Birnbrauer et al., 1974; Kratochwill, 1978, p. 41). A baseline standard was established against which behavior changes during the intervention were measured. A period of measurement after the intervention was established to ascertain with greater certainty that it was the intervention that was responsible for change.

During the initial baseline session the children played freely with no interaction from the teachers. Free play data were collected by three observers.

The intervention phase of the study involved individualized instruction from the teachers on prescribed social tasks. Free play observation were taken each day after the instruction portion of the period was completed.

The final baseline session involved a return to the conditions of the initial baseline.

Rationale

The aim of all instructional programming should be to create an environment that will take over and maintain newly acquired behaviors through naturally occurring consequences (Gelfand and Hartmann, 1975, p. 102). As Sulzer-Azaroff and Mayer (1977, p. 474) state, the effectiveness of an intervention program cannot be completely appraised until assessments of behavior generality have been conducted. The ABA time series design provides the occasion for this assessment in concordance with the multiple-probe design.

Internal and External Validity

The ABA design suffers from the same possible threats to internal validity as the multiple-probe design; i.e., history, maturation, testing, instrumentation, instability, change in unit composition and reactive intervention (Kratochwill, 1978, p. 14). Those threats that warrant further discussion are testing and instrumentation.

The testing done during this phase of the investigation did not pose any stimulus for change as it was unobtrusive in nature. This minimized the reactive effects of testing. The observers were in plain sight of the subjects during the observational periods, but because of the age of the children, with age being correlated to reactivity (Johnson and Bolstad, 1973, p. 38) the children would not be subject to excessive reactive effects.

The use of a live observational system and a lengthy period of data collection makes instrumentation or instrument decay a threat to the internal validity of the study (Johnson and Bolstad, 1973, p. 18). To alleviate some of this threat, the observers were put on a random check system under nonreactive conditions (Kazdin, 1977) and checked against a criterion observer (Romanczk, Kent, Diament, and O'Leary, 1973; Reid, 1970). Informing the observers that a random check system would be operating increased the stability and accuracy of the recording. There was a 20% overlap of observations for the baseline conditions and a 50% overlap of observation for the treatment condition. This was necessary because the observation time available during the treatment condition did not allow always for high frequencies of behavior, which is detrimental to observer agreement estimates (Johnson and Bolstad, 1973, p. 11).

To ensure observer accuracy (Johnson and Bolstad, 1973, p. 10) observer drift was checked by the viewing of a free play videotape twice during the observational portion of the study (Kazdin, 1977). The videotape had been consensually rated prior to the start of the investigation by the observers (Romanczyk, 1973) and was employed as an operational definition of the behavioral code (Hollenbeck, 1978, p. 83). It is noted however, that not all categories received equal representation on the videotape. The degree of accuracy between the observers and the videotape criterion was 89 and 93% for the two viewings. An additional source of continuous training was comprised of discussions of the behavioral code each day prior to the observations.

Unintentional observer bias in the form of recording errors of omission, and commission and errors resulting from predictable behavior on the part of the subjects or knowledge of intended results (Hollenbeck, 1978, p. 83) although a weakness, was to some degree eradicated by high observer agreement percentages (Johnson and Bolstad, 1973, p. 37) (see Tables 6 and 7).

The threats to external validity found with the ABA design once again are similar to those of the multiple-probe design. They include population considerations, independent variable description, Hawthorne effects, novelty and disruptive effects, experimentor effects, pre and posttest sensitization, interaction of history and treatment effects measurement of the dependent variable, interaction of time of measurement and intervention effects, and referent generality. A

Table 6

Interobserver Agreement Scores for All Categories by Scored Interval and Interval by Interval

Observers	Mean Agreement		Range of Agreement Scores	
	S-I	I-I	S-I	I-I
A and B	83%	93%	33-100%	93-100%
A and C	88	97	63-100	86-100

Table 7

Interobserver Agreement Scores for the

Social Interaction Subcategories

Category	Mean Agreement	Range of Agreement
Maintains Activity	80%	33 - 100%
Complies with Physical Contact	83	50 - 100
Complies with Assisting	75	33 - 100
Physical Contact	80	50 - 100
Assisting	86	75 - 100
Taking Turns	84	33 - 100
Sharing	100	
Leading/Following	75	50 - 100
Coordination	91	50 - 100
Negative	100	

further discussion follows on those factors that differ in consideration from the previous discussion on external validity. They include pretest and posttest sensitization, novelty and disruption effects, and measurement of the dependent variable.

The measurement instrument was unobtrusive and nonreactive, and used when the children were engaged in free play. For this reason pretest and posttest sensitization along with novelty and disruptive effects did not pose a threat to the ecological validity of the study.

Measurement of the dependent variable must be measured validly and reliably if generalization of results is to occur (Kratochwill, 1978, p. 27; Sulzer-Azaroff and Mayer, 1977, p. 57). Through the possession of content and face validity the dependent variable is deemed an appropriate measure of the social interactive behavior of the subjects.

Content validity is considered evident in that the categories were derived from observations in a preliminary field-experimental situation (Bijou, Peterson, Harris, Allen, and Johnson, 1969; Bijou, Peterson and Ault, 1968). The instrument was developed to identify the interactive behaviors found in free play and is considered to validly represent the social interactive behaviors found in free play. Face validity was judged evident in that the categories were behaviorally defined in a similar setting to that of the observational study.

To ensure that the observers were gathering reliable data, two factors must be considered: accuracy and stability (Hollenbeck, 1978; Hartmann, 1977). Hollenbeck (1978) pointedly states that observer agreement does not by itself assess observer accuracy unless it is compared with some previously established standard nor does observer agreement assess stability unless it is measured over repeated trials. Observer accuracy was tested as previously mentioned through the viewing of a criterion videotape. To ensure observer stability, agreement scores were calculated continuously during the collection of the data. Scored interval agreement which is formulated by ignoring those intervals where neither observer scored a behavior gives an indication of the adequacy of the response definitions, the competency of the observers and the believability of the experimental effect (Hawkins and Dotson, 1975). The response definitions appear to be reasonably adequate with the exception of 'complies with assisting' and 'leading/following' both with 75% agreement (see Table 7).

The competency of the observers was adequate in that the agreement scores far exceeded the 50% guideline for S-I and 85% guideline for I-I agreement suggested by Hawkins and Dobes (1977). I-I agreement refers to calculating the percentage of agreement by using every interval whether the desired behavior was observed or not (Hawkins and Dotson, 1975).

The high S-I agreement increases the believability of the effect due to the intervention. Overestimations of behavior or underestimations cannot lose their magnitude in S-I agreement scores calculations where experimentor bias may be observed (Hawkins and Dotson, 1975).

Instrumentation

The social interaction categories were behaviorally defined from videotaped samples of free play in the Prep Program (Bijou, Peterson, Harris, Allen, and Johnson, 1969) to behaviorally describe that which occurs socially between mentally retarded youngsters and to identify behaviors that may be of instructional significance (Wasson, and Watkinson, 1979). These categories were subsequently modified to reflect more molar levels of social interactions and reflect increasingly sophisticated levels of social interaction, with the exception of the negative category which stands alone. The categories of the instrument are mutually exclusive and exhaustive (Sackett, 1978).

The measurement instrument utilized to assess the amount of free play time spent in social interaction consisted of four social categories with their respective subcategories and one negative category (Figure 5, see Appendix A for definitions). The interaction categories reflected social interaction extending from giving a compliant response to another child's initiation, to working together as a unit to accomplish a play activity that could not be achieved as individuals. The increasing sophistication of each level is reflected in the degree of initiation and compromise to one's own wishes required to bring about a successful interaction. The lowest level of social interaction was comprised of the interruption of one's own solitary play activity to accept the social initiation of another child (i.e., complying with association). In the next level of social behavior the child is not only the recipient of a social response, but he goes out and initiates an interactive exchange with another child (i.e., association). In advance of this is the social interaction in which two children reciprocally interact in an activity that requires mutual participation (i.e., cooperation). The highest form of social interaction as defined is manifest in the division of roles in which the efforts of one child supplement the other to achieve that which could not be achieved alone (i.e., coordination). Although the social interaction categories reflect an increasing level of sophistication they are not necessarily sequential. It cannot be said that a progression through the lower levels of social interaction is required before the child can be expected to work cooperatively.

The social interaction instrument meets the consistency demands of a reliable test. The split half reliability calculated with the Spearman-Brown correction formula (Johnson and Bolstad, 1973) was .77.

Procedures for Data Collection

The children were observed directly from behind an enclosure each day in free play. A 10 second interval method of recording was used (Bijou, Peterson, and Ault, 1968). To the sound of a recorded tone the children's behaviors were observed and recorded onto prepared sheets (see Appendix B). Each child was seen once every 80 seconds during the baseline conditions and once every 40 seconds during the training period. The observers observed four children each day during the training period and all eight during the baseline sessions in a predetermined random order. The social behavior that occurred for the majority of the 10 second period was recorded with the exception of the negative category (see Appendix A for the coding rules).

Treatment of the Data

The free play data reflecting the amount of time spent in social interaction during free play was transformed into percentages of time spent, presented graphically and subjected to visual analysis. As with the teaching graphs the visual representations were assessed according to trend, level, and variability of performance between and within phases (Glass, Willson, and Gottman, 1975; Kratochwill, 1978; Jones, Vaught, and Weinrott, 1977). To supplement the visual analysis of trend, linear trend lines were fitted to the data by the method of least squares (Parsonson and Baer, 1978).

CHAPTER IV

RESULTS

Patterns of Social Participation

The purpose of the study was to investigate the effects of an individualized instruction program on the social interaction patterns of moderately mentally retarded children. The free play social patterns displayed prior to the initiation of the study are given in Table 8. The children spent 22% of their free play time interacting with a peer. The remaining time was spent in play of a solitary or parallel nature. The discussion to follow pertains to the social play time of the children. Within this 22% of peer interaction time the predominant social behavior was 'compliance with association'. The subcategory of complies with assisting contributed little to this 11% figure. Similarly, assisting contributed minimally to the 3% of free play time spent in 'associative' play. 'Cooperation' was exhibited second most frequently. The 6.6% was composed of taking turns and leading/following, with little contribution being made from the subcategory of sharing. 'Coordination' was rarely seen; only 1% of all the free play time for all subjects was involved with organizing play so as to produce a new product or situation. Nonreciprocal interaction between the children encompassed 14% of the free play social time, with interaction of a reciprocal nature encompassing approximately 8% of the time.

There was great variability between the subjects in the amount of time spent in social interaction during the prebaseline condition

Table 8

Percentage of Free Play Time
Spent in Social Interaction
During Prebaseline

Category	Subcategory	Percentage	
COMPLIANCE WITH ASSOCIATION		11.25	
	Maintains Activity		4.25
	Complies with Physical Contact		6.78
	Complies with Assisting		.22
ASSOCIATION		3.00	
	Physical Contact		2.56
	Assisting		.44
COOPERATION		6.60	
	Taking Turns		2.69
	Sharing		.28
	Leading/Following		3.63
COORDINATION		1.00	
TOTAL SOCIAL PARTICIPATION		21.85	

(Table 9). While less than 1% of the available free play time was spent in social activities for subject three, as much as 37% of free play time was engaged in interactive behavior for subjects four and five. The results do no suggest that social participation is related to age, with younger children spending more play time alone. The two youngest subjects, two and four respectively, spent 21 and 37% of their time playing with another, which is comparable to the 26 and 20% displayed by the two oldest subjects, one and eight.

The second youngest child, subject four, demonstrated the largest amount of reciprocal play, (i.e., cooperation and coordination) while the oldest child, subject eight, was reciprocally interactive only 3% of the time. The complexity of social behavior displayed also does not appear to be related to age for these subjects.

Participant Progress

To answer the question of whether the proposed instructional model used in the Prep Program to teach gross motor skills could successfully be applied to the teaching of social behaviors, each child's progress was plotted according to his highest performance level during instruction each day on the three prescribed tasks (Figures 9 to 16).

Variability

Variability in performance within subjects was demonstrated during the acquisition of the prescribed social behaviors. Subjects one, two, four and seven displayed fairly stable positive progress. Subject seven (Figure 15) did have a drop in performance of the first

Table 9

Percentage of Free Play Time Spent in Social Interaction During Prebaseline in Relation to Age of Subjects

Subject	Age	Total Social Participation[a]	Cooperation and Coordination
1	7 yrs. 10 months	26	14
2	6 yrs. 0 months	21	4
3	7 yrs. 8 months	.25	0
4	6 yrs. 4 months	37	21
5	7 yrs. 1 month	37	15
6	6 yrs. 6 months	6	3
7	7 yrs. 6 months	28	2
8	9 yrs. 6 months	20	3

[a] Social interaction includes the categories of: Compliance with Association, Association, Cooperation, and Coordination.

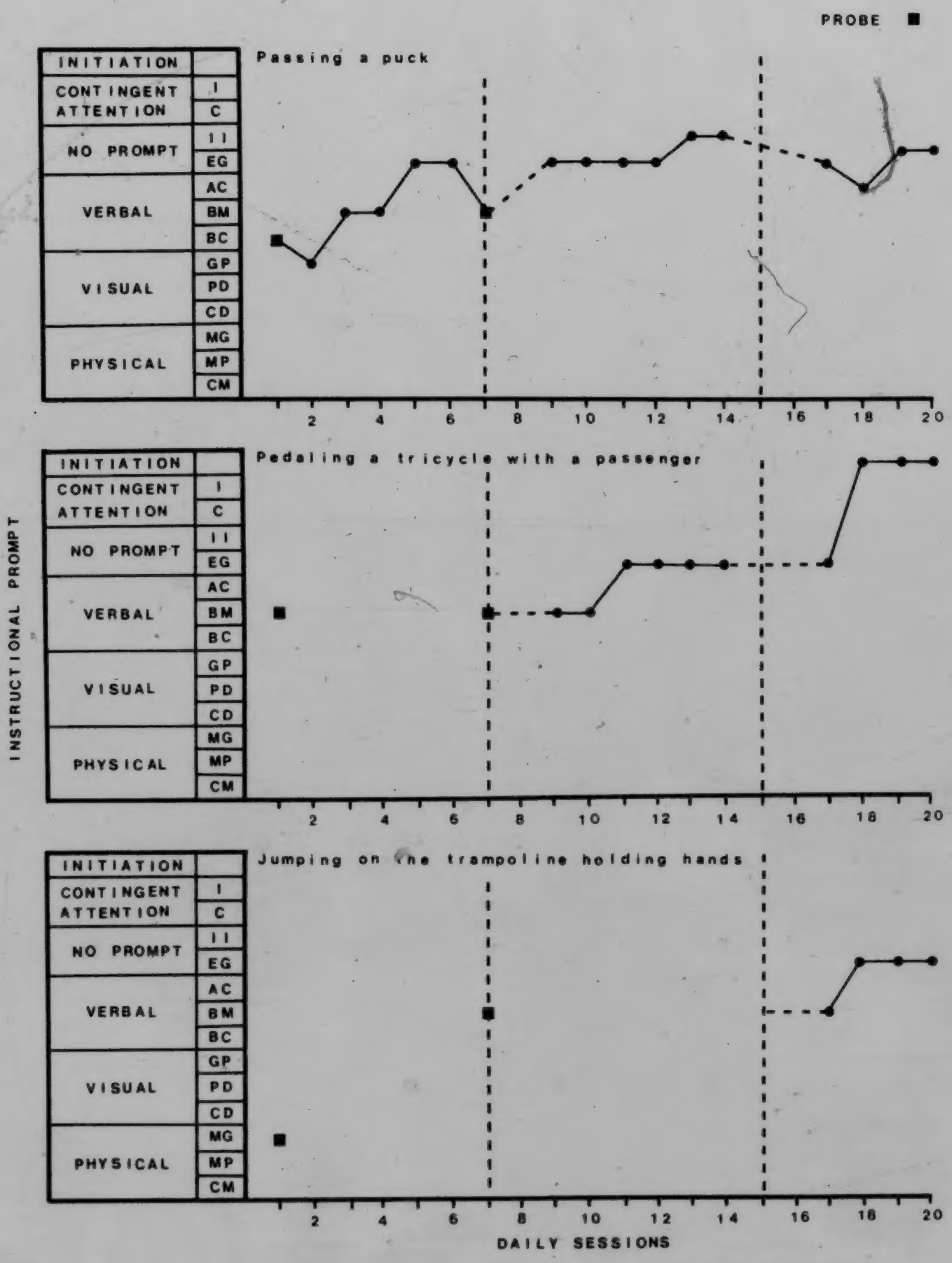
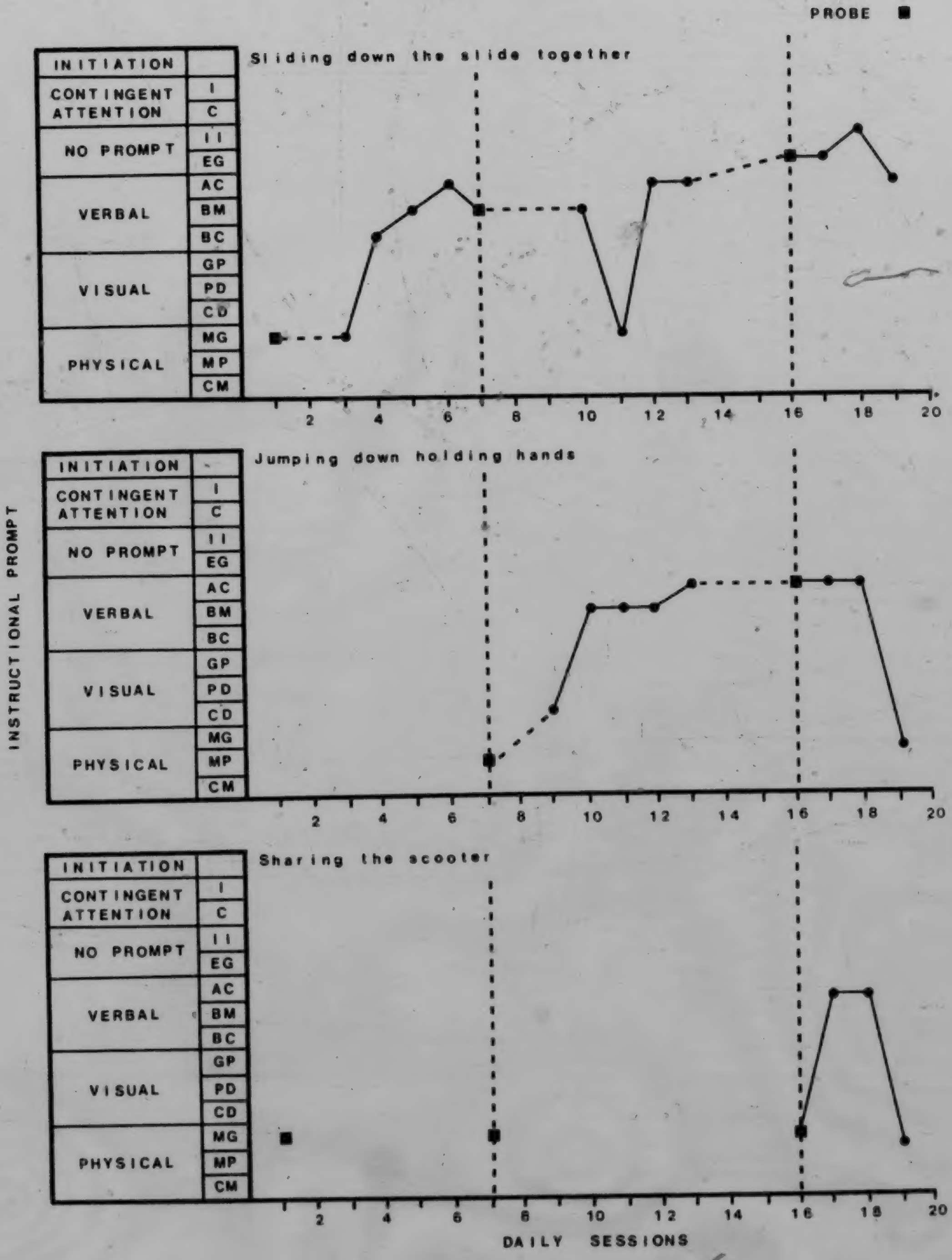


Figure 9. Subject one: learning curves for prescribed social tasks


Sliding down the slide together

Jumping down holding hands

Sharing the scooter

Figure 10. Subject two: learning curves for prescribed social tasks

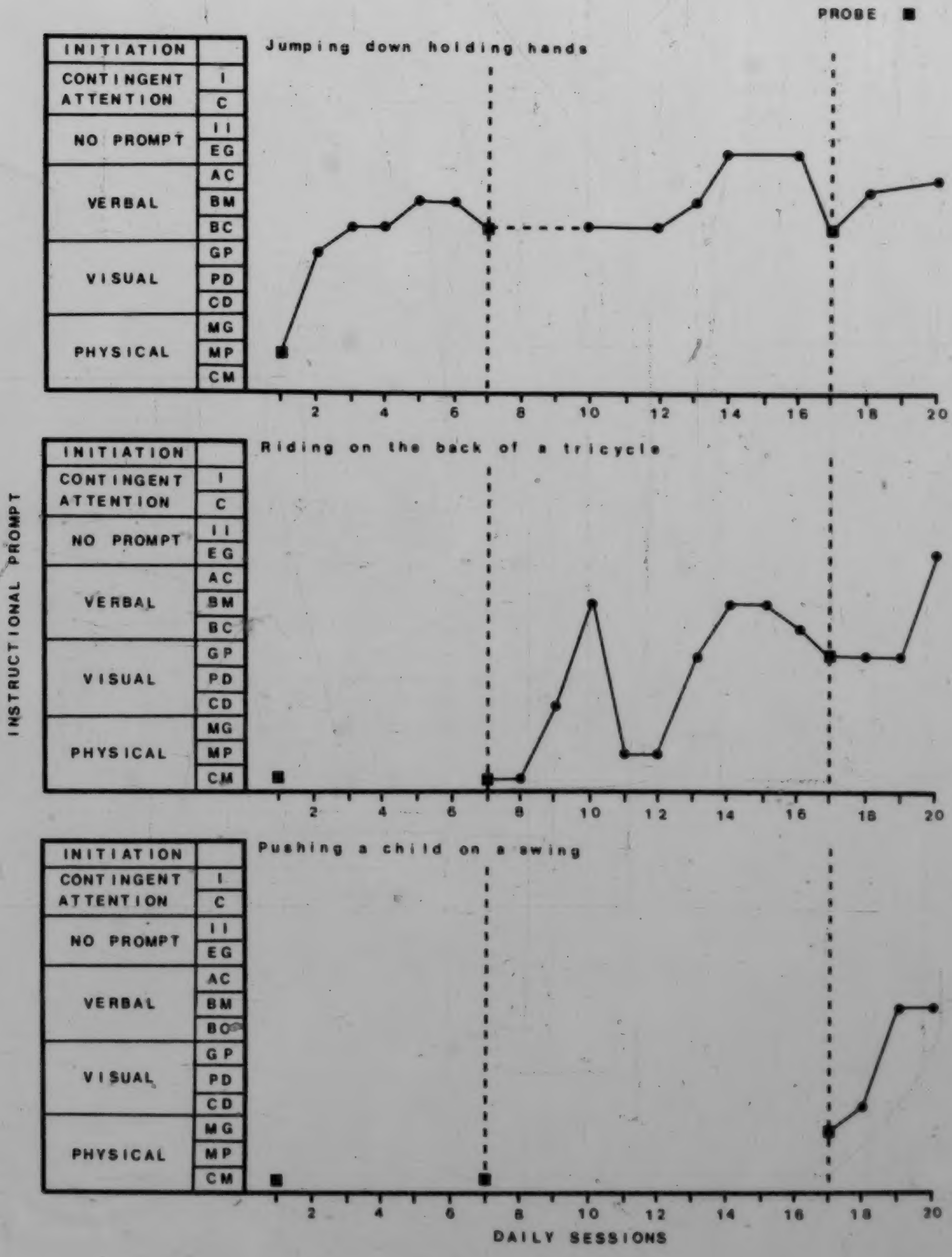


Figure 11. Subject three: learning curves for prescribed social tasks

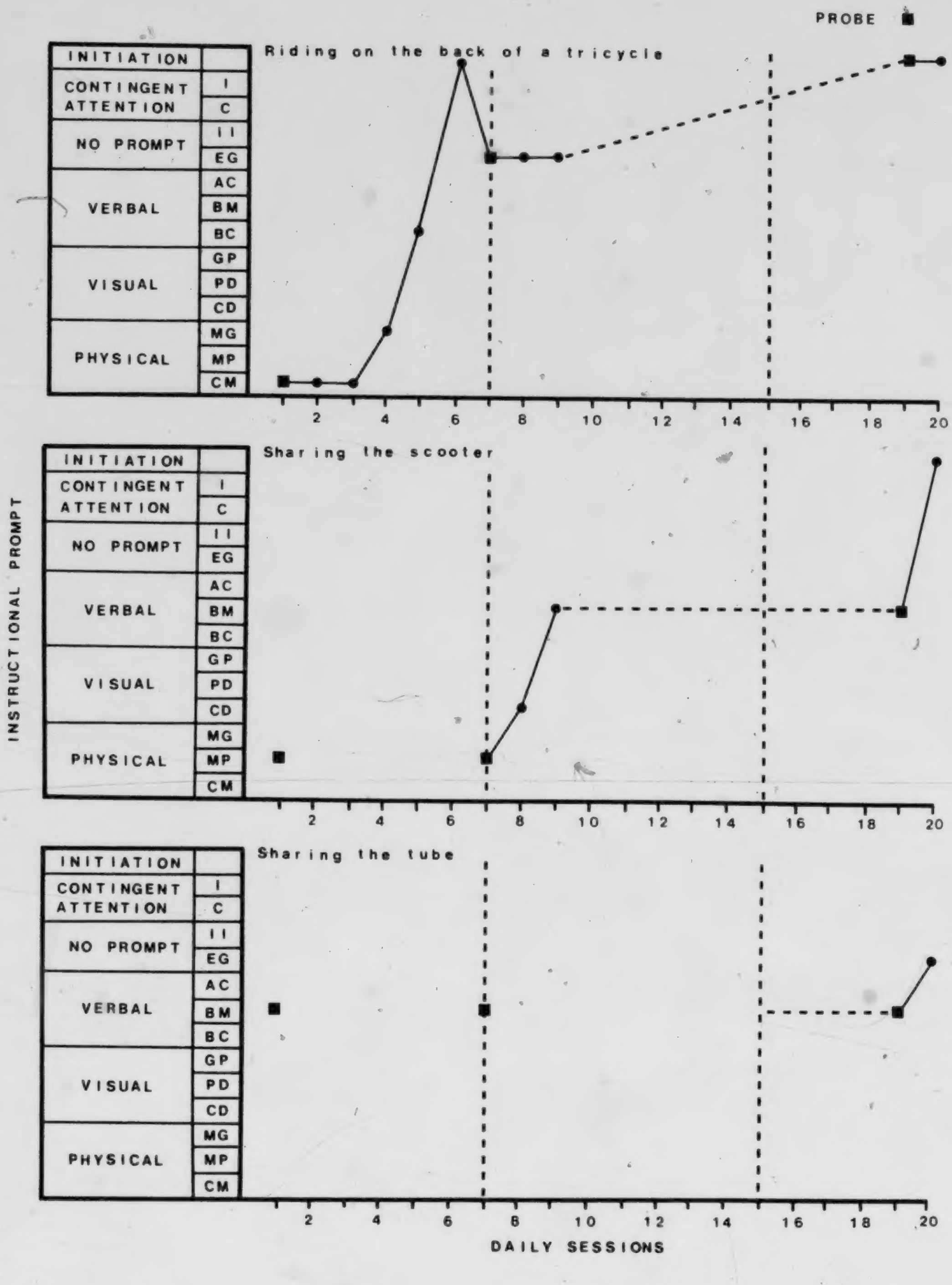


Figure 12. Subject four: learning curves for prescribed social tasks

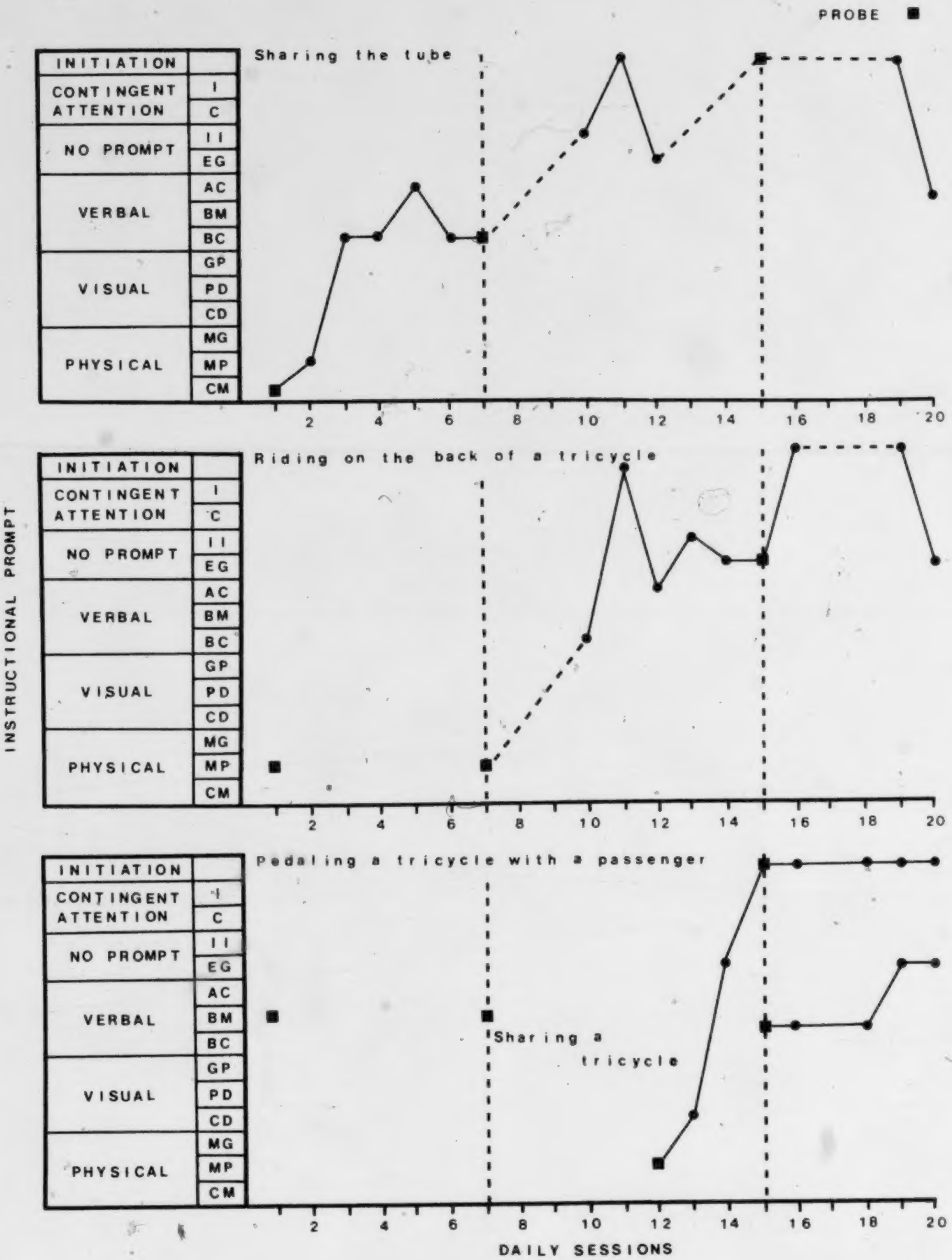


Figure 13. Subject five: learning curves for prescribed social tasks

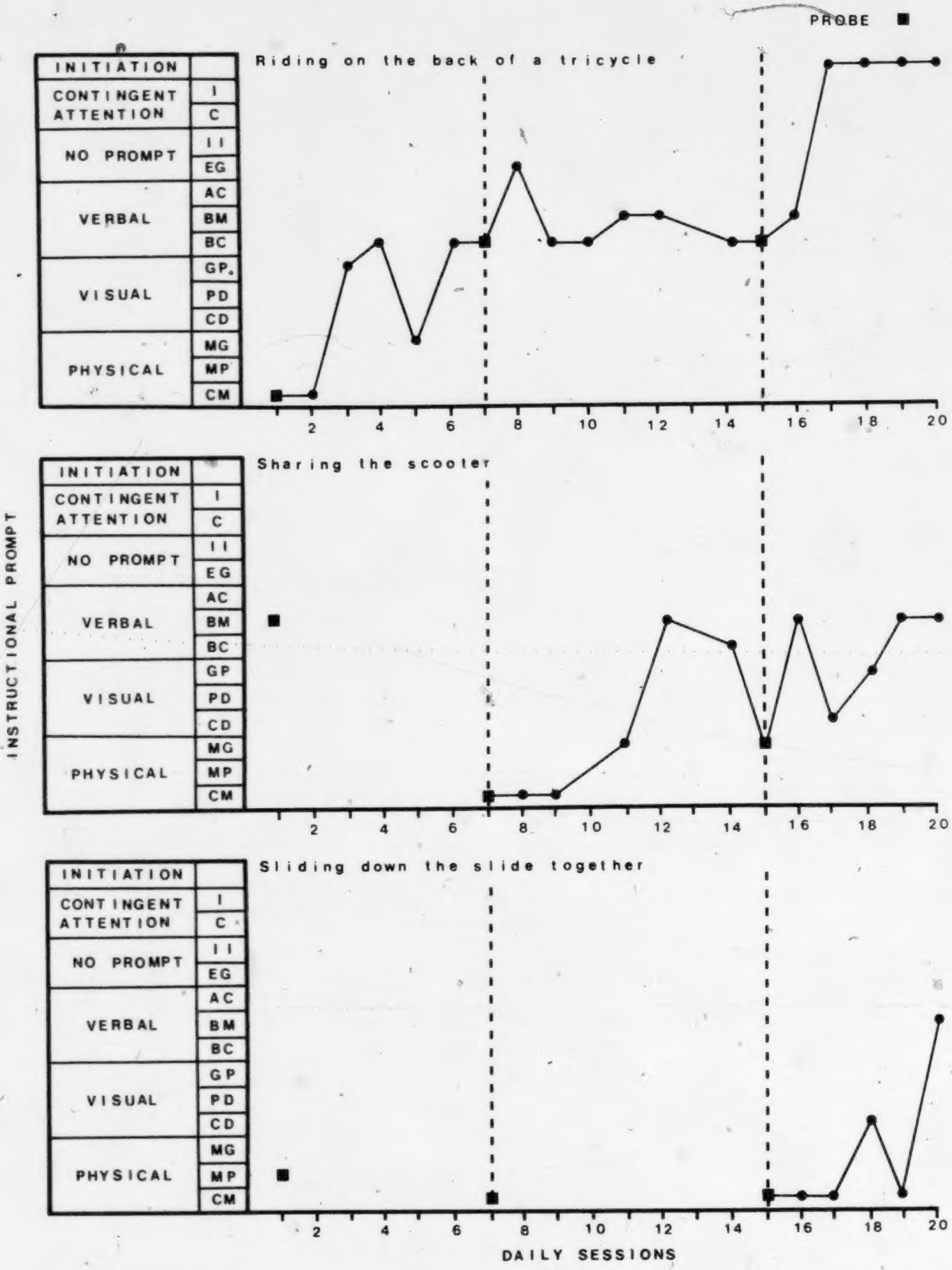


Figure 14. Subject six: learning curves for prescribed social tasks

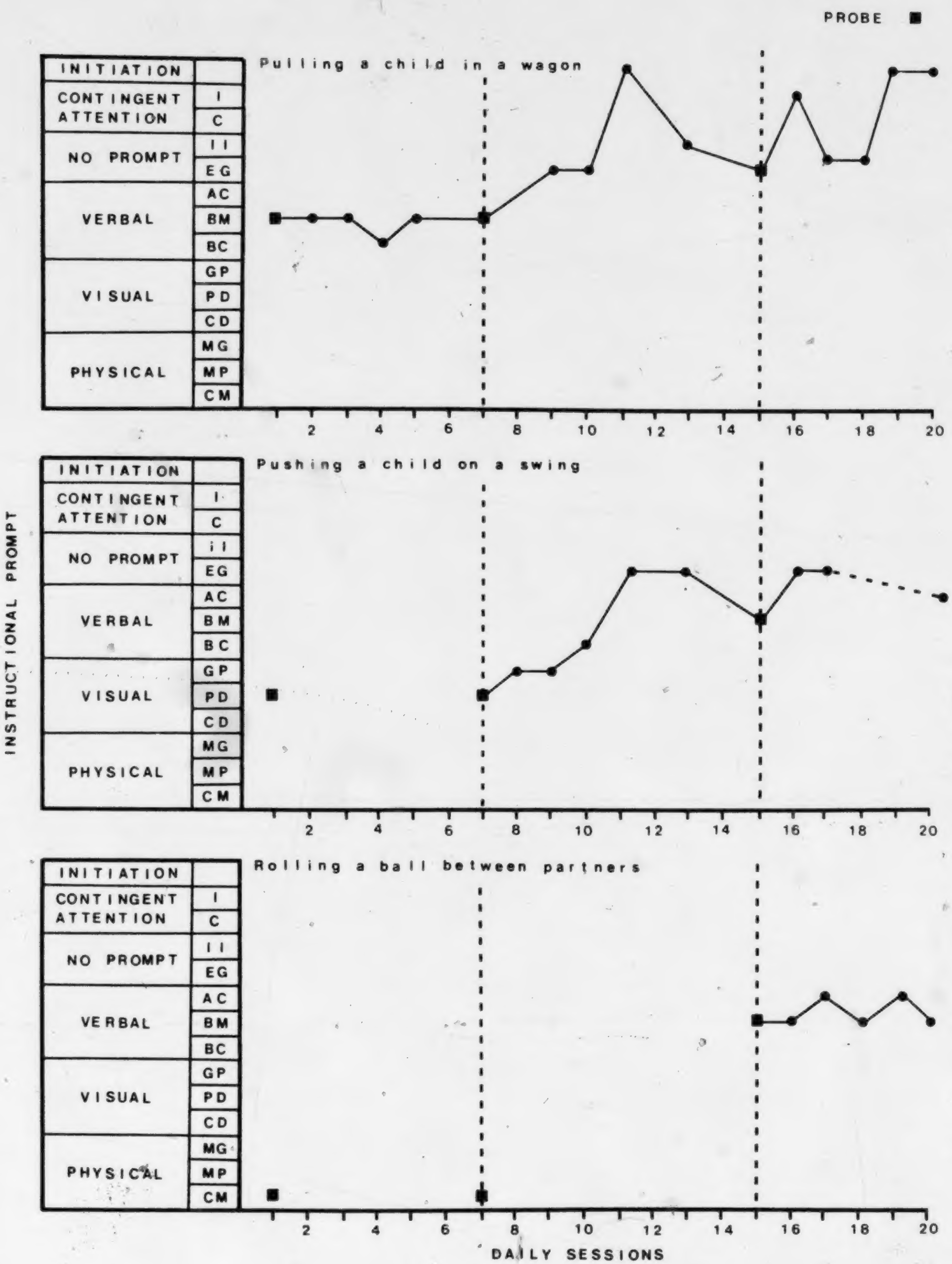


Figure 15 Subject seven: learning curves for prescribed social tasks
]

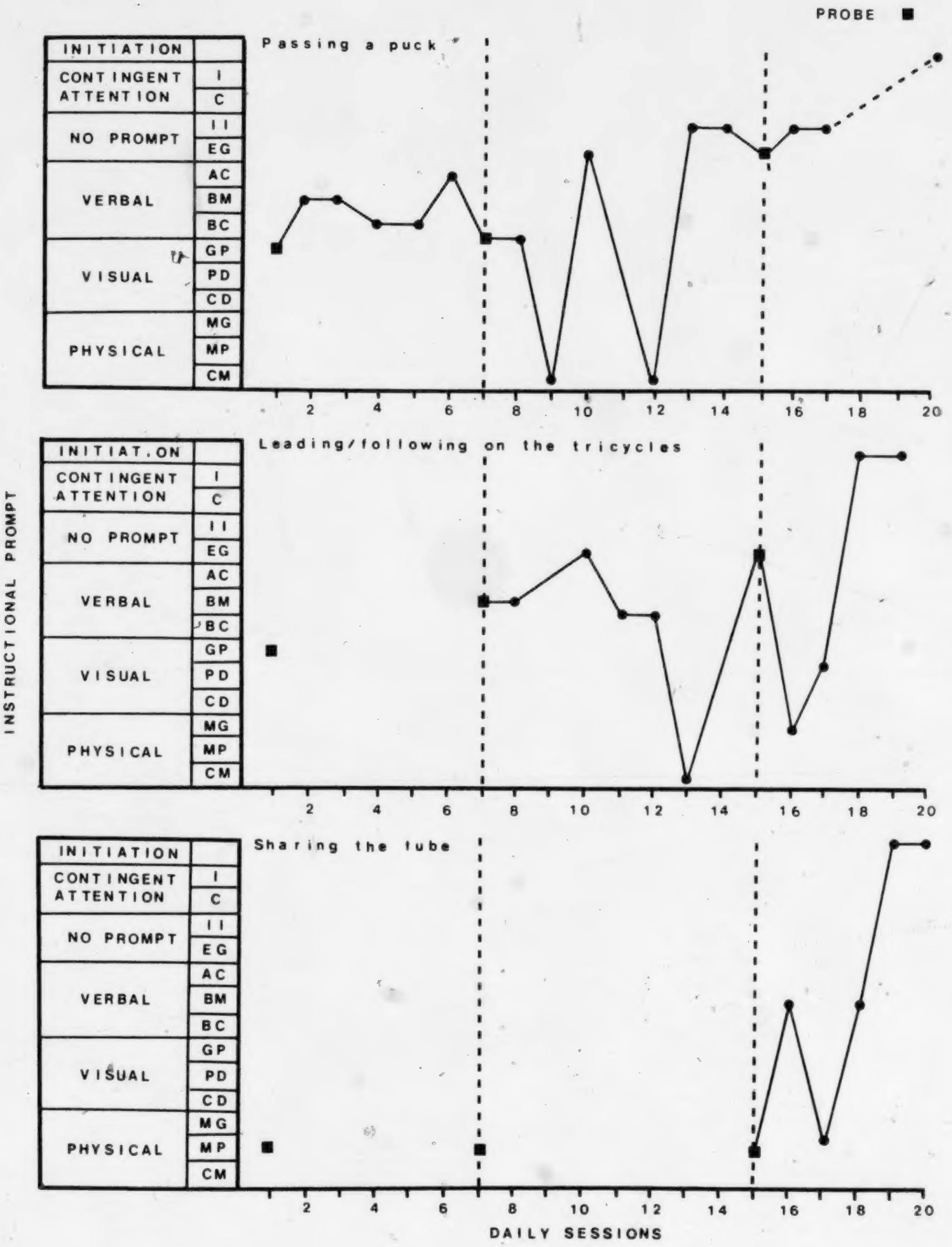


Figure 16. Subject eight: learning curves for prescribed social tasks

task (pulling a child in a wagon) when instruction was not received for several days. Subject two (Figure 10) showed a dramatic decrease in performance on all 3 social tasks on the last day of instruction. It is interesting to note that a lengthy absence did not extinguish subject four's (Figure 12) previously acquired level of performance.

The learning curves for subject three (Figure 11) were stable with the exception of the second task, riding on the back of a tricycle. Similar fluctuations were seen in the performance of subject eight (Figure 16). Jumps between verbal prompting and complete manipulation occurred on two of the tasks receiving instruction (passing the puck to a partner and leading/following on the tricycles). The variability of performance displayed for subject six (Figure 14) on the first task of riding on the back of a tricycle was somewhat ameliorated when instruction on the second task was initiated, which continued with the initiation of instruction on the third task. The second task of sharing the scooter was variable as even the assessment probes prior to instruction were inconsistent, ranging from performances with behavior mand to complete manipulation.

Subject five (Figure 13) showed stable progress on all four social tasks. The first two tasks of sharing the tube and riding on the back of a tricycle fluctuated somewhat between initiation and the no prompt level of instruction. The remaining two tasks showed steady positive progress.

Level

For almost all of the social tasks for all the children there was a measurable change in the level of performance from the first probe to the last days of instruction. A positive change in performance was not seen however until specific instruction began on the social tasks for all but two of the 24 tasks receiving instruction. Subject one (Figure 9) for the social task of jumping on the trampoline holding hands, did show a performance increase between the first and second probe during which time no specific instruction on the task was received. Similarly subject eight (Figure 16) for the social task of leading/following on the tricycles, displayed a performance increase between the first and second probe. A change in performance for most social tasks however did not begin until specific instruction started.

Subject one's (Figure 9) performance of task one moved from an initial assessment at the behavior cue level, through the verbal prompting stage to a stable performance at the no prompt category of environmental goal. Similarly for the second task of giving a person a ride on the back of a trike, progress was made from the probed assessments of behavior mand to the final stage of initiation in free play. On the third task a change in level was evident between the 1st and 2nd probe with no direct instruction which was further increased to the no prompt level with instruction.

Subject seven's (Figure 15) changes in level were of a similar pattern. Pulling a child in a wagon progressed from performance at the behavior mand level into the no prompt category, with sporadic jumps up to the contingent attention and initiation levels. Pushing another child on the swing advanced from requiring the visual assistance of the teacher to prompting of a verbal nature. The third task of rolling a ball between partners changed levels from the first two assessment probes of complete manipulation to the behavior mand level without direct instruction and remained there for the duration of the program.

Many of the children made extreme changes in their level of performance. Subject five (Figure 13) advanced from complete manipulation for sharing the tube and manipulative prompting on riding on the back of a tricycle to the level of independent initiation. A similar change was seen from the third probe on riding the tricycle with a partner, although the early probes were at a higher level of performance. Subject four (Figure 12) displayed progress from the physical prompt level to initiation on two of the three tasks, riding on the back of the tricycle and sharing the scooter. Only two instructional days were available for the third task due to illness.

Subject eight's (Figure 16) third task progressed from manipulative prompt to initiation in only 5 instructional days. Subject six (Figure 14) also demonstrated this range of increase (from complete manipulation to initiation) for riding on the back of a tricycle, but over the course of the full instructional program.

No change in performance level was displayed by subject six (Figure 14) and two (Figure 10) from the initial probes to their final performance on one and two of their respective tasks. Subject six was initially assessed at the behavior mand level, for sharing the scooter. The second probe was at the complete manipulation level with further instruction bringing performance back up to initial probe level of behavior mand. Subject two displayed increases for jumping down holding hands and sharing the scooter above that of the initial probes. Performance on the final day of instruction dropped however back to the level of performance prior to instruction. This drop was also seen in the first task but not to the same degree.

Trend

Virtually all of the tasks for all the children had an upward trend in performance. Subject four (Figure 12) illustrated an abrupt upward trend over very few days of instruction. Changes from physical prompts to initiation in play were seen in 4 days for two of the 3 tasks. Similar findings were evident with subject five (Figure 13) on the third task of riding a tricycle with a partner. It is noted that because subject five achieved competent performance on all of the prescribed tasks in a short period of time, a forth behavior was chosen and taught. Subject eight's (Figure 16) performance, although of an upward trend was very variable. The first task of passing the puck was consistent at the behavior mand level. With the initiation of the second task, which was also consistent in performance, the first behavior became inconsistent. The third task displayed an abrupt upward trend which was accompanied by a less variable increase in performance on the other two tasks.

Subject two (Figure 10) had an initial abrupt upward trend in both the first and second tasks (sliding down the slide and jumping down holding hands). This upward trend was temporary however. Once the performance moved out of the physical and visual levels of performance it remained fairly consistently at the level of verbal prompt (also see task one, subject three). This temporary upward trend was also seen in the learning curves of subject one (Figure 9). Initial increases in task one of passing the puck leveled off such that performance did not progress past the no prompt stage of environmental manipulation and peer demonstrations. Task two of riding a tricycle with a partner also showed a similar pattern, although an increase in performance during the final days showed that the upward trend was delayed.

Subject six (Figure 14) on the first task repeated the patterns displayed by subject two (Figure 10). An abrupt upward trend on riding on the back of a tricycle leveled off in the verbal prompt level with the initiation of instruction on the second task. An upward trend was again seen however when instruction on the third task commenced.

Social Behavior in Free Play

A second purpose of the study was to investigate whether the children would demonstrate an increased sophistication in their social play during free play due to receiving instruction in specific social tasks. To examine this question the free play social behavior of the children prior to and after the instructional phase were calculated and expressed as the percentage of social time spent in each of the four categories (Figures 17 to 20).

Subject one received instruction on one task that fell under the category of 'compliance with association' and two tasks under the category of 'coordination' (passing the puck, pedaling the tricycle with a person standing in the back and jumping on the trampoline holding hands). In Figure 17 the free play social time demonstrates an increase in the amount of compliance with association displayed. An increase was also exhibited in coordinated play. Concomitant with the increase in coordination was an increase in association and a decrease of cooperative interaction.

Subject two received instruction in two compliance with association tasks (sliding down the slide together and jumping down holding hands)

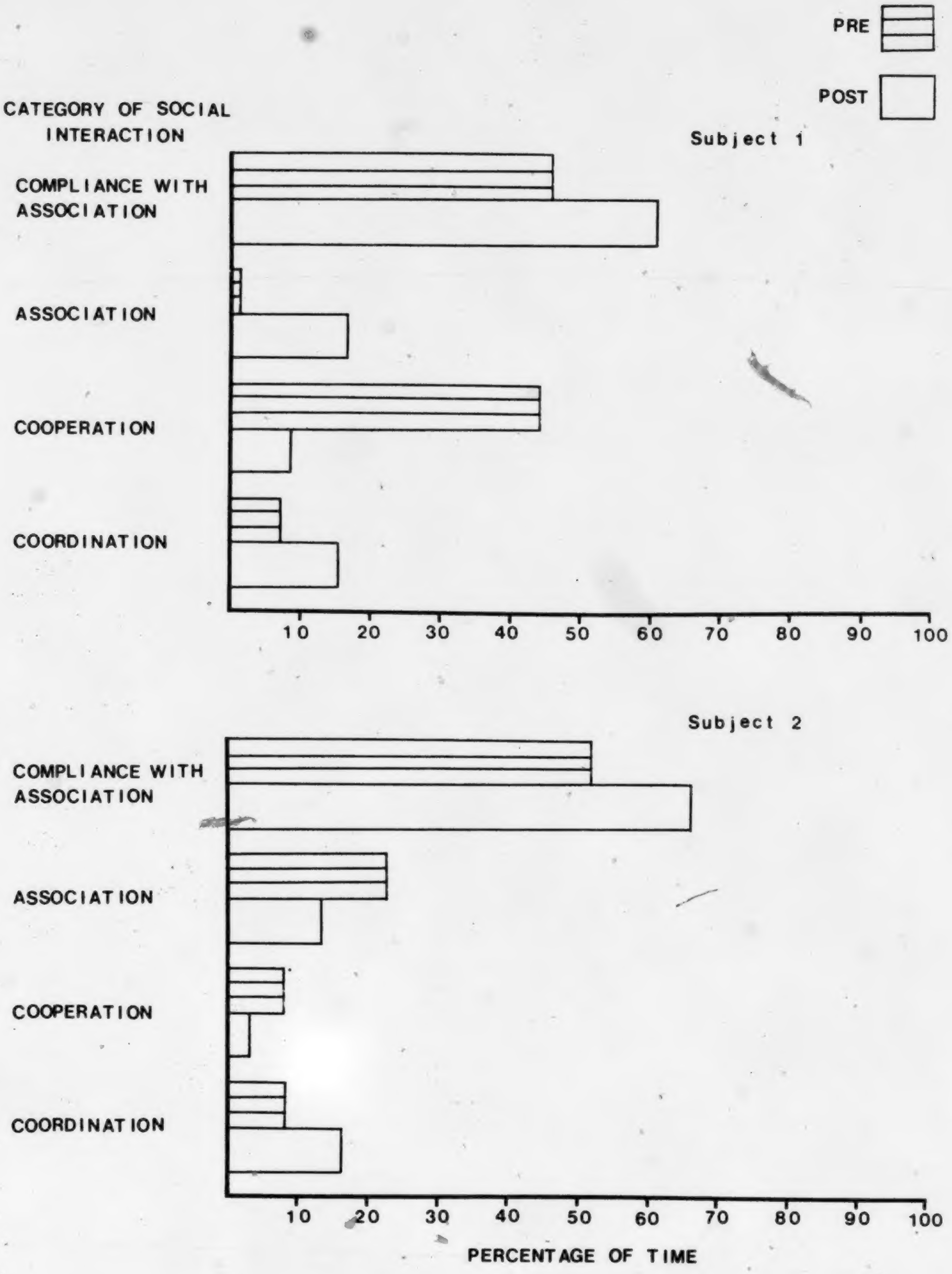


Figure 17. Percentage of social interaction time spent in each of the social interaction categories under prebaseline and postbaseline conditions

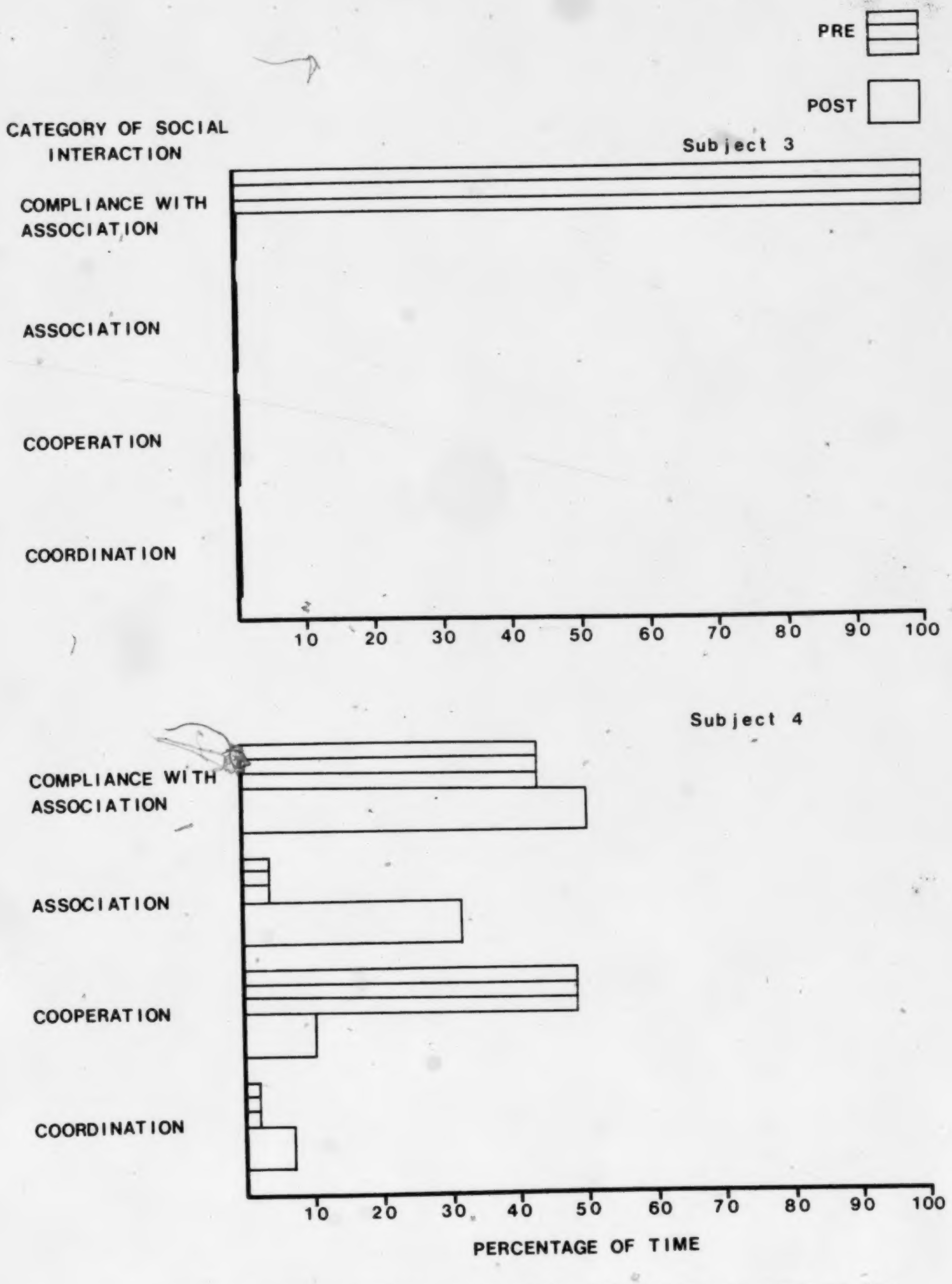


Figure 18. Percentage of social interaction time spent in each of the social interaction categories under prebaseline and postbaseline conditions

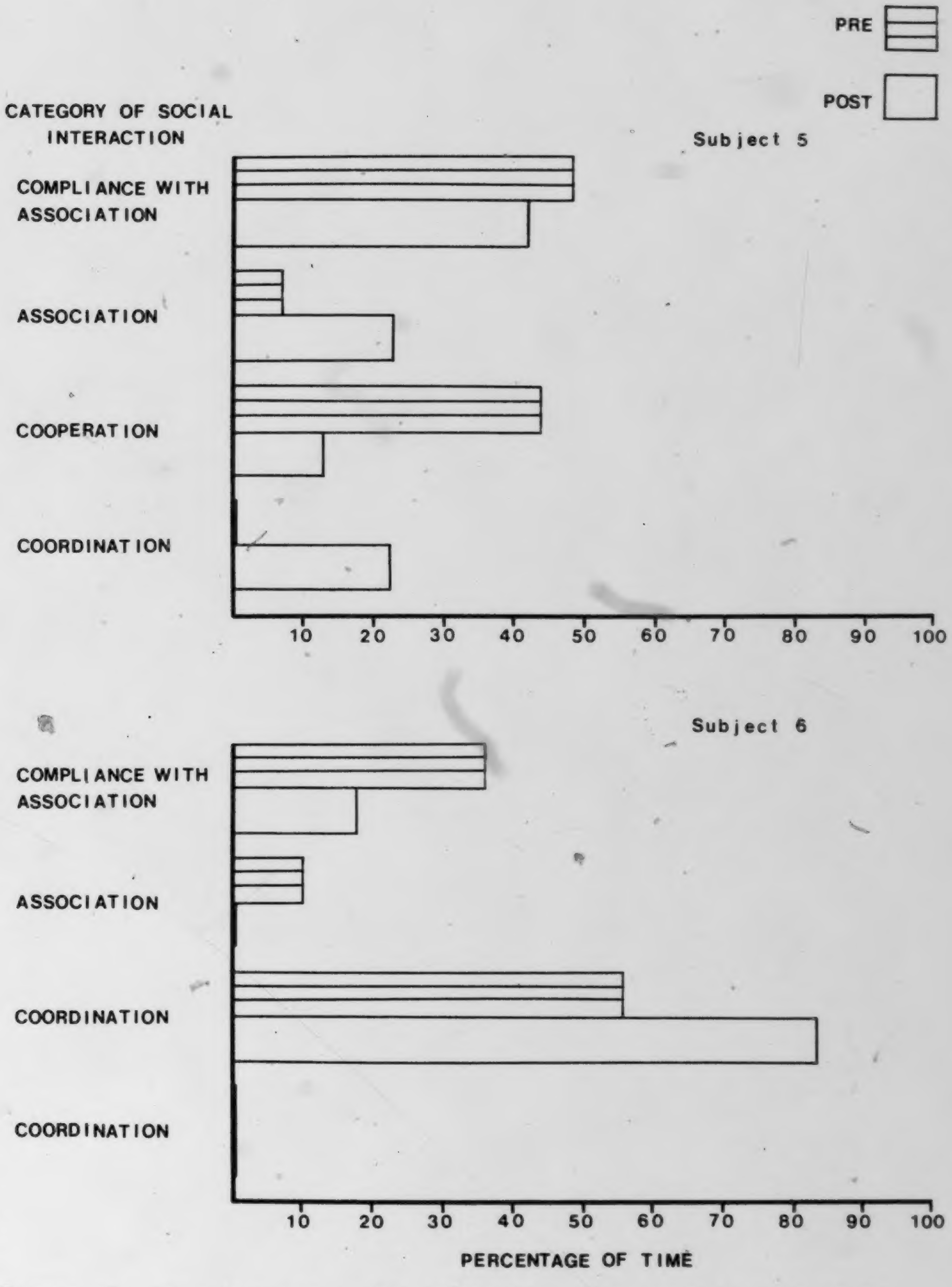


Figure 19. Percentage of social interaction time spent in each of the social interaction categories under prebaseline and postbaseline conditions

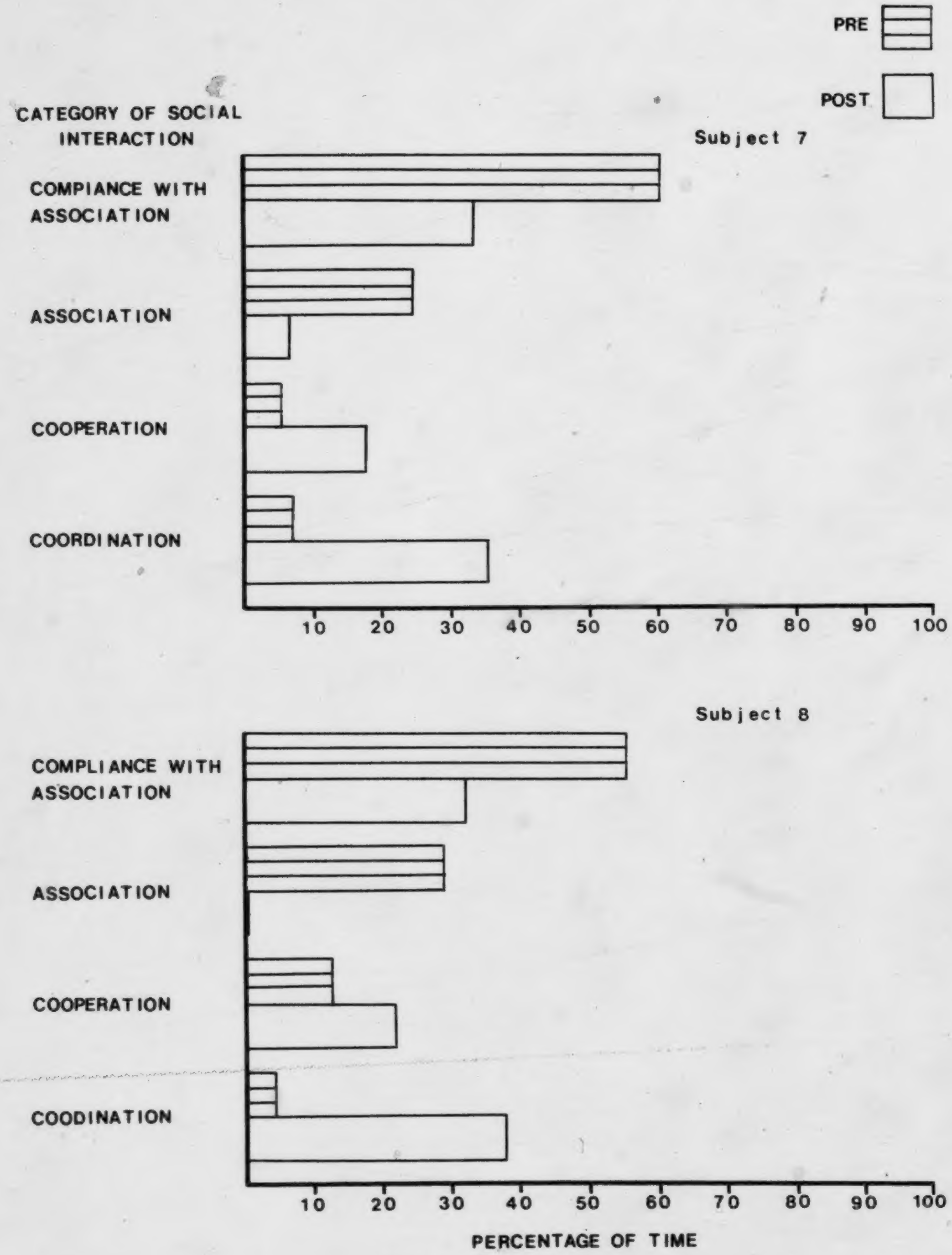


Figure 20. Percentage of social interaction time spent in each of the social interaction categories under prebaseline and postbaseline conditions

and one cooperative task (sharing the scooter). An increase of approximately 15% occurred in the amount of compliance with association displayed as indicated in Figure 17. Cooperative and coordinative play remained virtually the same while association decreased approximately 10%.

Subject three received instruction in a compliance with association task (jumping down holding hands) an associative task (pushing another child on a swing) and a coordination task (riding on the back of a tricycle). Figure 18 illustrates that all of the social behavior prior to instruction was of a compliance with association nature, and that after intervention there was no social behavior observed at all. The prebaseline figure of 100% represents the occurrence of only one social interaction over four observational days.

Although subject four (Figure 18) received instruction in two cooperative and one coordinative task (sharing the tube and scooter, and riding on the back of a tricycle) there was a drop in the amount of cooperative play. A small increase occurred in coordination. A large increase in associative play was observed as well as a small increase in compliance with association.

Similarly with subject five (Figure 19) instruction in two cooperative tasks and one coordinative task resulted in a decrease in cooperative play. A substantial increase occurred in coordinative social interaction however. An increase was also found in the associative category of social play. The two cooperation tasks were sharing the tube and tricycle and the coordination tasks were pedalling a tricycle with a partner and riding on the back of a tricycle.

Subject six (Figure 19) displayed a large gain of 30% in cooperative interaction with a subsequent decrease in both compliance with association and associative play. Coordination remained constant. Instruction was received on a cooperative task (sharing the scooter) as well as compliance with association (sliding down the slide together) and coordination (riding on the back of a tricycle). Although the coordination task reached the initiation level during instruction (Figure 14) it was not reflected in the free play sessions.

The instruction of two coordination tasks for subject seven (rolling a ball between partners and pulling a child in a wagon) was reflected in a large increase of approximately 30% for coordinative interaction, over the pre instructional baseline condition (Figure 20). Although instruction was given in pushing another child on the swing, association decreased with an increase in cooperative play occurring.

A similar finding is illustrated in Figure 20 for the eighth subject. A decrease in compliance with association and association occurs as cooperation increased approximately 10% and coordination increased approximately 25%.

This pattern is consistent with the tasks prescribed for instruction. The cooperative tasks of leading/following on the tricycles and sharing the tube, and the coordinative task of passing a puck to a partner, received instruction.

Generalization to Free Play

A final aspect of the study was to determine whether the time spent in instruction would cause an increase in the amount of social behavior displayed in free play. Figures 21 through 24 represent the

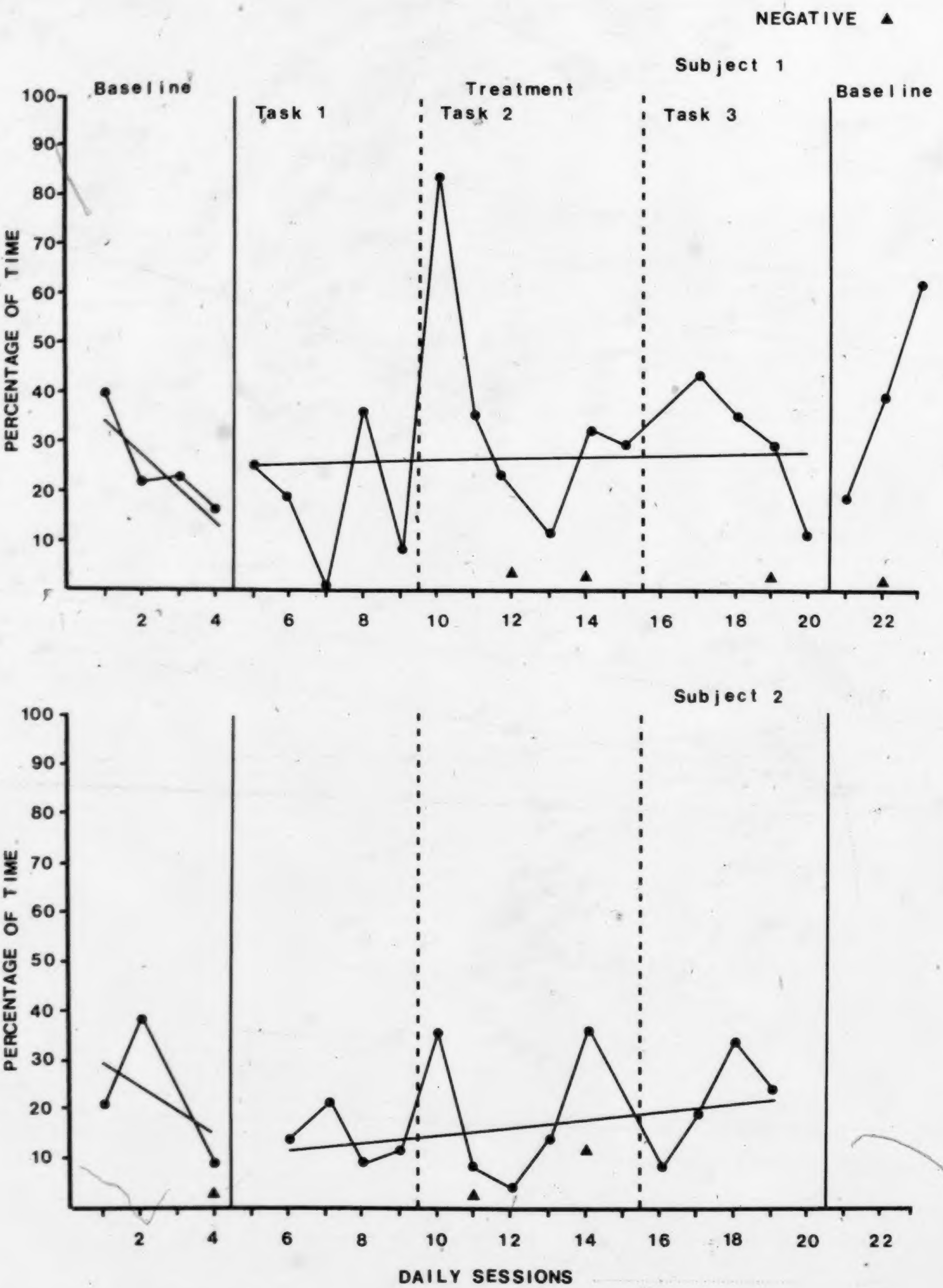


Figure 21. Percentage of free play time spent in social interaction under treatment and nontreatment conditions

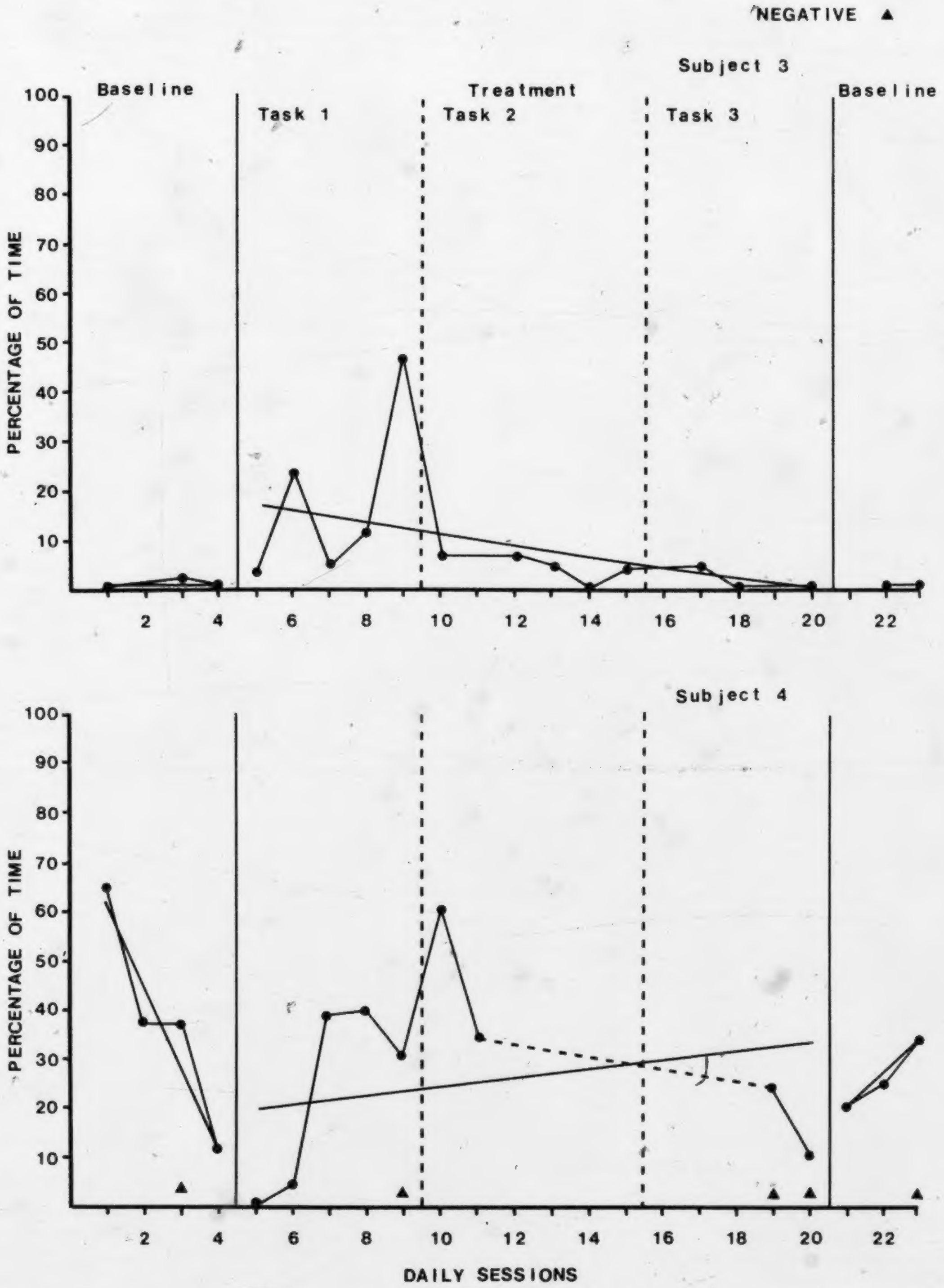


Figure 22. Percentage of free play time spent in social interaction under treatment and nontreatment conditions

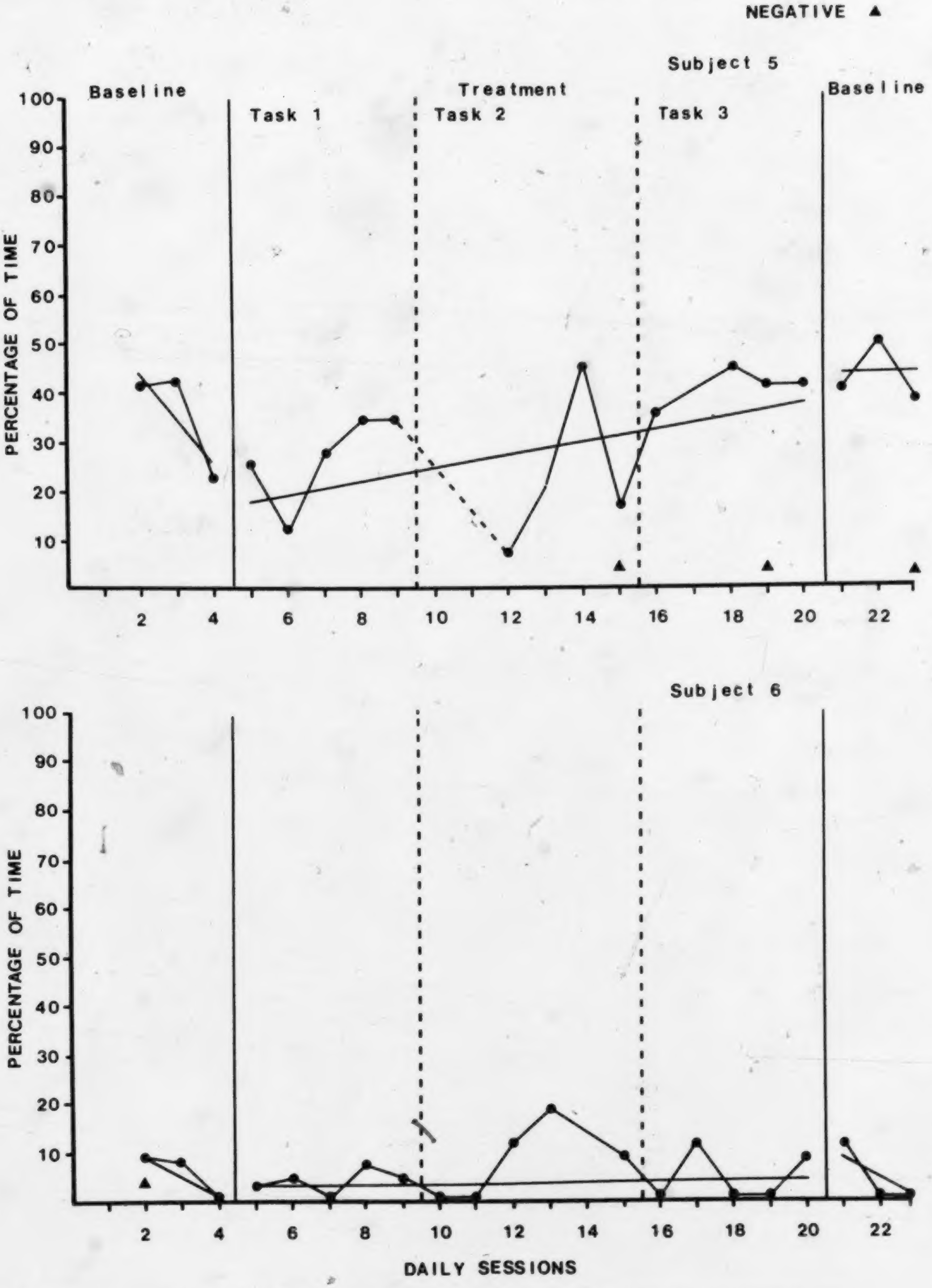


Figure 23. Percentage of free play time spent in social interaction under treatment and nontreatment conditions

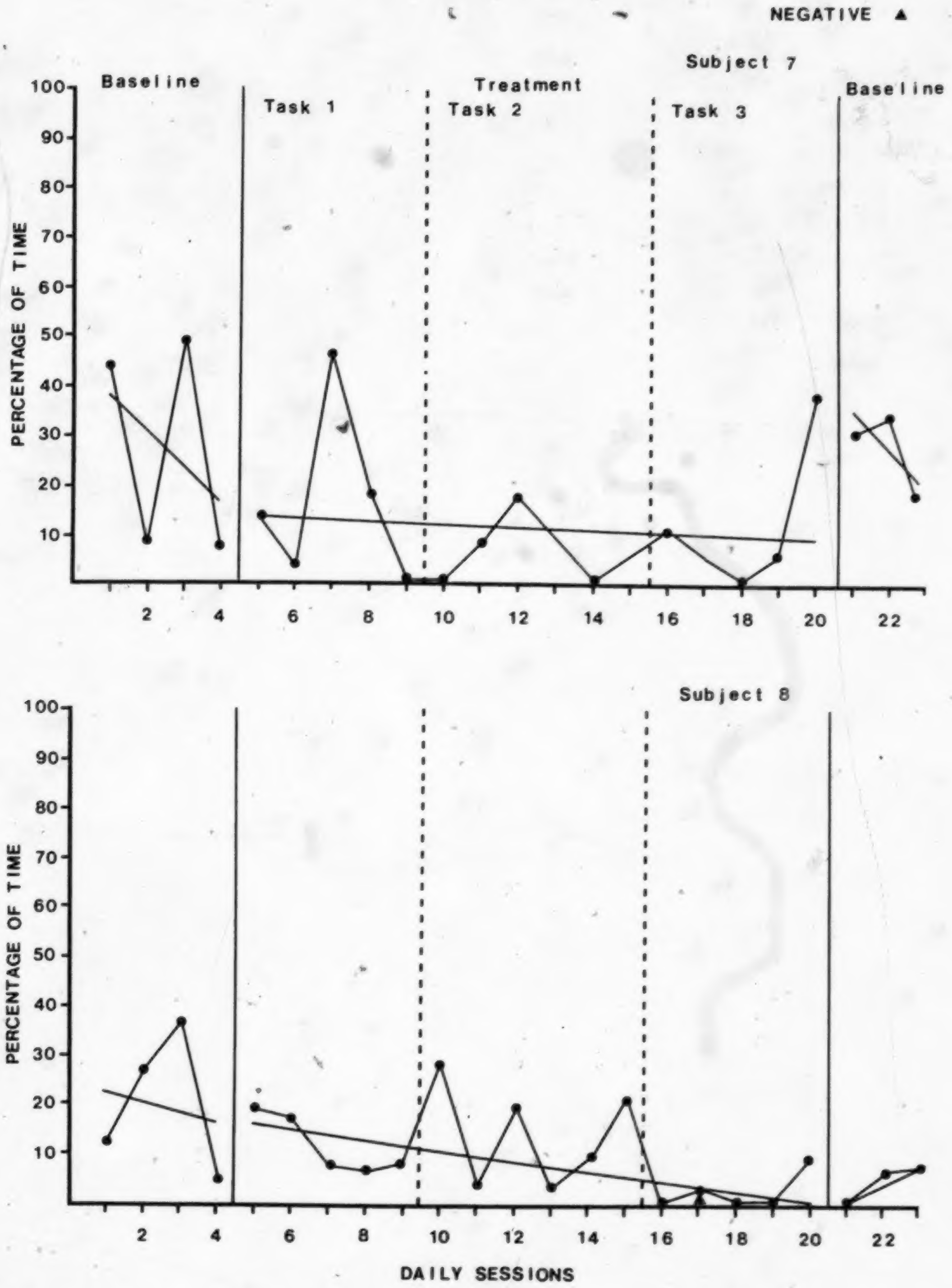


Figure 24. Percentage of free play time spent in social interaction under treatment and nontreatment conditions

means to assess this question. The free play social participation for all categories was collapsed into one social play percentage and plotted across the days of instruction. Negative behavior was also represented, although it seldomly occurred and was of low intensity. For this reason it will not be mentioned further.

Variability

Great variability was evidenced in the free play data both within and between the various phases of the study.

Great variability in the amount of time spent in social interaction during the prebaseline condition was evidenced in all subjects except three and six (Figures 22 and 23), who spent less than 10% of their free play time interacting with peers. A discrepancy of as much as 35% of social participation time was seen across two days (see subject seven, Figure 21). This variability was carried across to the instructional phase of the program. A leveling off of social participation was shown by subject one (Figure 21) shortly after instruction began on the second social task. Subject three (Figure 22) maintained a consistently low and stable rate of interaction as did subject six (Figure 23).

Subject eight's (Figure 24) social time was variable until instruction began on the third task at which time performance stabilized at a low level. Subject two's performance (Figure 21) was irradic throughout the study.

Post baseline data was somewhat less variable than that occurring over the other program phases. Leaps from high to low were not as prominent nor dramatic, with the exception of subject one (Figure 21).

Level

No consistent change in level was evident in any of the free play data. Overlap between baseline and treatment conditions did not permit a statement about a change in level of performance to be legitimately made.

Trend

The inconsistency in trends was as prominent as the variability of the social behavior. Subjects one (Figure 21) and three and four (Figure 22) displayed positive upward trends at the initiation of the instruction but it proved to be temporary as the behaviors returned to the baseline level. A delayed upward trend was evidenced for subject six (Figure 23) but it too proved to be temporary.

An upward trend during the first phase of instruction of subject five (Figure 23) was lost after an absence of instruction, with the remaining instruction time spent returning social participation to the baseline and initial instructional level.

Subjects two, six, seven and eight (Figures 21, 23, and 24) displayed no recognizable trends in their free play social interaction during the instructional portion of the study. The trend lines suggest that subjects seven and eight may have had a decrease in their social play performance across instruction.

Subject one and four (Figures 21 and 22) displayed an upward trend in social play during the post baseline condition during which time instruction in social tasks was terminated and the children participated in free play.

A change in direction of trend lines was evidenced in the performance of subjects one, two, four, and five in favour of the treatment period. Downward sloping trends during the prebaseline period were changed to upward trends during the instructional phase. The overlap of scores between the baseline and treatment phases did not permit conclusive statements to be made about changes in social behavior in free play as a result of the instructional program.

CHAPTER V

DISCUSSION

Patterns of Social Participation

The results of the prebaseline assessment of free play (Table 8) show that the percentage of free play time spent in social interaction was in accordance with previously reported findings for mentally retarded children (Table 3). The combined percentage of 7.70% for cooperation and coordination closely resembles the 8, 9, and 7% of social participation in free play reported by Capobianco and Cole (1969), Mayhew, Enyart, and Anderson (1978) and Wasson and Watkinson (1979) respectively. For purposes of comparing this study with others, social participation was defined as including those behaviors which were reciprocal in nature and referred to by Parten (1932) as associative and cooperative.

The study revealed that young moderately mentally retarded children spend a lesser amount of free play time in social interaction than do their non retarded peers. The children were socially interactive approximately 8% of the time in comparison to non retarded youngsters who interacted approximately 40% of the time (Table 1).

A further look at the component parts of the free play time that was spent in social interaction (Table 8) suggests that once a child functions comfortably in a compliance role where tolerance of or acceptance of another child's social initiative occurs little time is spent in the next category of association. It may be that for the isolate child, being on the receiving end of a social interaction is quite satisfying, but once the child initiates his own social interaction the non reciprocal nature of association is not reinforcing enough to sustain the behavior for long. The child may at this point revert to being dependent upon others to initiate the social interaction, or move on to the reciprocal behavior of cooperation or coordination.

It may be more pleasant to be compliant with associative advances than to be in isolation, but a prolonged stay at this level may not be desirable. A child who does not reciprocally reinforce and sustain interaction will soon be abandoned in favour of more socially advanced peers. If left alone at this point the child maintaining the receiving role of an interaction may be faced with the loss of any previous social contact if he himself does not initiate social interaction with his peers.

Once associative behavior occurs, it does not appear to be sustained for long. It may not be as reinforcing and attractive as an ongoing interaction, and is perhaps abandoned for the more complex social behaviors of sharing, taking turns, leading/following and coordinative activities. Gable, Hendrickson, and Strain (1978) suggest that these behaviors function to set the occasion for a more prolonged and reinforcing social contact.

In terms of social behaviors that are reciprocal in nature much less time is spent in coordination than cooperation. This is consistent with the social play patterns of non retarded children (Table 3). Behavior of a coordinative quality requires that the child suppress his own play desires for the benefit of the group. In cooperative play on the other hand all the children possess equal roles. The transition from the more egocentric play of cooperation to the less egocentric aim of coordination appears to be a large transition for all children to make.

It has been suggested that the development of social participation is dependent upon age (Parten, 1932; Barnes, 1971; Rubin, Watson, and Jambor, 1978). Kindergarten children have been shown to spend more time interacting with peers during play than have preschool children (Table 2). The results of this study suggest that this may not be the case for moderately mentally retarded children. A wide range was seen in the amount of time spent in social interaction across subjects. In terms of cooperative and coordinative play, the two oldest subjects were reciprocally interactive 3 and 14% of the time with the two youngest subjects being interactive a similar 4 and 21% of the time (Table 9). The results tend to suggest that waiting for the natural progression of social participation to unfold as the child leaves the preschool years may be unwarranted. Systematic intervention may be indicated for some children if they are to receive the benefits associated with social interaction.

What to Teach

Appropriateness of the Tasks

The progress displayed by the children on the prescribed social tasks (Figures 9 to 16) would suggest that the behaviors chosen for instruction were appropriate. All of the social tasks but one were performed with a greater degree of independence at the termination of the instruction phase of the study than at its initiation. An increase in performance was not observed for the social task of rolling a ball back and forth with a partner after five days of instruction (subject 7, Figure 15).

The tasks all appeared to be age appropriate and the children received instruction well. The tasks were not too infantile so as to be easily attained nor were they so complex that no progress was made toward independent performance.

The motor skill level demanded by the social tasks did not pose significant problems. Most of the children were proficient at the motor skills required for the social tasks. Passing the puck between partners did prove to be somewhat restrictive however, due to the high degree of stick control necessary. As few of the children had the aiming prerequisite, the choices of a cooperating peer for instruction were limited.

In terms of the physical environment few problems were encountered in executing instruction. Once a schedule for the tricycles was determined so that the availability of favorite tricycles did not interfere with instruction on the other tasks, instruction proceeded with ease. Equipment availability was not a problem.

Effectiveness of the Tasks

The social tasks taught reflected varying degrees of success in modifying the social behavior of the children in free play.

Social tasks that were considered to be of a compliance with association nature were instructed on five occasions. This instruction resulted in an increase in compliance with association during free play for two of the three subjects (subject three was excluded as her performance of any social behavior was so low). An associative task was taught on only one occasion to subject three and did not reflect a change in performance.

Cooperation, which consisted of mainly sharing the taking turns was taught seven times. Of the five subjects receiving instruction in these tasks, an increase in social time spent in this category was seen in only two cases, with decreases occurring in the remaining three children.

Coordination, on the other hand was almost 100% successful in producing a positive increase in the social time spent in that category during free play. Coordinative tasks were taught nine times and produced an increase in coordinative behavior in five of the children and no change in the sixth.

Gable et al. (1978) suggest that the behaviors selected for instruction have a high probability of being followed by positive peer behaviors. It would appear that cooperative tasks are not readily transferred to the social play behavior of free play, while coordinative tasks are. Further research is needed into explaining why cooperative tasks, although reciprocal in nature do not readily transfer to free play. There may be a gradient scale of positive peer behavior. The quality and/or quantity of positive peer behavior received as a consequence of a social interaction may determine its frequency of occurrence in free play.

This finding suggests that further research is needed to investigate the need or appropriateness of teaching social tasks at all levels of the social interaction. Rather than slowly moving the child through the four social categories it may be more efficient to teach social tasks at only the coordinative level. If it is only coordinative tasks that show a transference to non treatment settings, perhaps this is where teaching emphasis should be focused.

How to Teach

Both the instructional model and the proposed teacher behaviors appeared to be efficient and functional approaches to the teaching of social behavior to young moderately mentally retarded children. Although these two components of the instructional strategy are closely related (Figure 7) they will be discussed individually as they deserve separate consideration.

Instructional Model

The instructional model (Figure 4) required that one teacher work with two children. One child was the focus of instruction while the other child acted as the cooperating peer, permitting the social interaction to occur between children. Williams, Hamre-Nietupski, Pumpian, McDaniel-Marx, and Wheeler (1978) suggested that this instructional strategy has a potential advantage for the generalized application of acquired behavior. The use of a cooperating peer may aid in shifting the control of behavior from adults during instruction to peers during free play. This approach is also efficient in terms of teacher time and effort: only one teacher is required to maintain the instructional set. The use of one teacher with more than two children is an interesting strategy and may prove profitable with more research. It is suspected however, that for social behavior to be maintained in a group setting some elementary social skills must be well established unless the social behavior receiving attention is of low complexity.

The use of a cooperating peer for instructional purposes requires that the teacher be sensitive to opportune teaching times during which both children can be brought together to one piece of equipment. The children must be brought together without feeling that they are being pulled away from their own play but rather that they are embarking upon something of interest.

To investigate the appropriateness of the instructional model in the instruction of social behaviors, the children's performance was examined according to the change in level of performance at the initiation and completion of instruction.

An increase in independent performance on the prescribed social tasks occurred in 23 of the 24 behaviors taught (Figures 9 to 16). Of the 17 tasks beginning instruction at the physical prompt level of teacher assistance 100% advanced to the verbal prompt level and more than half advanced to the no prompt level. Of the 24 tasks receiving instruction, 38% progressed to the point of repeated independent initiation. The significance of the behavior increase suggests that the instructional model was instrumental in the children's acquisition of the social behaviors and may be a reasonably effective means by which to teach specific social tasks to moderately mentally retarded youngsters.

The multiple probe design illustrates further the efficacy of the instructional model. An increase in the children's performance did not occur until the initiation of instruction for 21 of the 24 social tasks. For the majority of the children changes were seen with the start of instruction but for some of the children a change in the level of performance was delayed such that it took several sessions before the experimental effects began to appear. Subject seven (Figure 15) for example, required 7 days of instruction before an increase in performance was observed on the task of pulling a child in a wagon. Subject three (Figure 11) conversely demonstrated abrupt changes in the level of performance with no delay, at the onset of instruction. Parsonson and Baer (1978) suggest that a delay in performance change may simply reflect a latency in the emergence of a treatment effect, although the need for better programming in the initial phases should not be overlooked.

The change in level of performance occurred over a maximum of 17 instructional days, with many of the changes occurring over 12 and 5 days. As stated by Brody and Stoneman (1977) it is important that new behavior can be acquired quickly as behaviors must mature and fade with the growth of the child. The instructional model may thus be considered an efficient means by which to teach specific social behaviors.

The Response Prompting Continuum

To investigate the appropriateness of the teaching behaviors the children's performances were examined according to trend. An examination was made of the prompts utilizing by the teachers as an upward trend in the children's performance was effected (Figures 9 to 16). All of the subjects with the exception of subject eight moved upward through the instructional prompts toward independent performance. The large variability of performance for subject eight (Figure 16) made it difficult to interpret his performance.

Upon closer scrutiny of the individual progress curves it became obvious that the visual prompt level of instruction was not being systematically applied to all of the tasks. In fact, 36% of the social tasks progressed without the systematic application of visual prompts. Although the importance of progressing through each of the instructional prompt levels cannot be ascertained at this point, visual prompting is assumed to be a valuable component of skill instruction for mentally retarded children (O'Connor, 1972; Paloutzian, 1971; Peck, Apolloni, Cooke and Raver, 1978). The incomplete use of visual prompts during instruction may have its base in the attention demands it placed on the children. During the time when the teacher demonstrated the behavior with another child, she may not only have lost the child's attention but she may have also lost the child. An alternative would be for the teacher to refer to two other children who were performing the desired behavior. However, the opportunity for this form of demonstration in free play is not always available. It may be necessary in these cases for the teacher to rely more heavily on partial demonstration and gestural prompting as the instructional strategy.

The no prompt category appeared to be an important part of the prompting continuum. It is not known at this time if performance at the environmental goal level is more sophisticated than a performance with imitative initiation, but this prompting level does appear to be instrumental in bringing the child's performance to a level where verbal cues are no longer necessary.

The major modification made to the Prep Program response prompting continuum was the addition of the 'contingent attention' category. This was done so as to ease the abrupt transition required to move from the teacher manipulated environmental situations of the no prompt category to the initiation of the behavior in free play. Fading teacher reinforcement enhances the possibility of the intrinsic rewards for the performance of the social behavior unfolding and maintaining the behavior in free play. Unfortunately, few of the tasks progressed past the no prompt level of performance so that contingent attention alone could be used. For this reason it is difficult to make an assessment of the value of this instructional category. Perhaps if more teaching time had been available, the appropriateness of this instructional prompt could be further scrutinized. The learning curves of subjects one, four, five, six and eight (Figures 9, 12, 13, 14 and 16) suggest that repeated performance at the initiation level can occur without the fading of adult reinforcement. Once again however, there was not enough time available to determine if the performance consequences were strong enough to prevent the behavior from being extinguished over time. Further research is needed to determine the appropriateness of this instructional prompt in the teaching of social behaviors.

Variability of performance was demonstrated for some of the subjects. It was found for example that the fairly stable performance of subject two (Figure 10) was interrupted on the last day of instruction. A dramatic drop was observed in 2 of the 3 tasks, with a less significant drop occurring in the third. Parsonson and Baer (1978) suggest that this would signal the presence of a variable other than the treatment variable operating to control the subject's behavior. With such a drop in performance in all three tasks on the same day, it is quite probable that an external variable was operating that was outside the control of the study. Variability to a much more significant extent was operating throughout the treatment condition for subject eight (Figure 16). The large regressions in performance suggest that the non treatment variable operating should have been identified and excluded from the situation or a method devised to convert the variable so that it operated, if not to enhance the treatment variable, to at least not interfere. Subject eight's temperament was such that he often wished to be left to himself or to just sit and observe. During such times complete manipulation would be required to complete the response.

The treatment package was not strong enough to overcome day to day fluctuations in the children's ability to perform at a consistent and increasing level. Although experimental control is necessary to ensure the internal validity of the study, denying the children the freedom to be moody, have bad days due to colds, or just to be mischievous is not the aim of instruction.

Generalization

Quantitative Changes in Free Play

The teaching behaviors comprising the response prompting continuum had provisions for pulling the children through the transition from behavior performance under treatment conditions to free play conditions.

Sulzer-Azaroff and Mayer (1977) state that the mere occurrence of behavior change does not mean that the change will persist and generalize to other situations but that the environment must be structured to maintain the behavior change. Such was the aim of the no prompt categories of environmental goal and imitative initiation. The children were prompted to execute the behavior without direct and specific teacher intervention, thus moving one step closer to free play initiation.

Efforts were further extended to decrease teacher interference and promote self initiated performance by the systematic application of the instructional prompt category of contingent attention. O'Connor (1972) points out that enhancing the social interaction of peers through the responses of reinforcing adults may be somewhat contradictory. With each delivery of praise and attention the child is drawn away from the peer interaction. To bring about the acquisition of social behaviors and yet have them occur in free play outside of teacher attention, the systematic withdrawal of teacher attention was used, moving from a continuous schedule to an intermittent one.

The results of Figures 21 to 24 do not show any repeated trends or changes in level that can be conclusively attributed to participation in the instructional program. The overlap of percentage of time spent in social interaction in the prebaseline, treatment and postbaseline phases of the study does not permit a distinguishable trend or change in level to be ascertained (Parsonson and Baer, 1978). It is concluded then, that there was no generalization of the behaviors learned under the treatment condition to the free play behavior of the children as reflected by an increase in the amount of time spent in social interaction during free play.

Baer, Wolfe, and Risley (1968) state that generalization should be programmed for rather than expected. Admittedly an assumption was made that once a child learned some basic social behaviors and began to engage in social interactions, material contingencies would shape further activities. The transition from teacher control to independent performance has been termed a 'behavior trap' (Gelfand and Hartmann, 1975). The naturally occurring consequences of behavior execution are strong enough to take over and maintain newly acquired behaviors. Stokes and Baer (1977) have termed this form of generalization pursuit 'train and hope'. After the manipulation of environmental conditions to affect a behavior change, generalization across responses, settings, experimentors, or time is documented but not actively pursued. The desire for generalization in this study however did not rest on the train and hope supposition.

Why then were the provisions not successful in bringing about the generalized application of social behavior to free play above that demonstrated during the prebaseline conditions?

A contributing factor to the failure of generalized behavior may have been the means by which the data were gathered. The use of a ten second interval time sampling technique may have been inappropriate. The social behaviors of interest were of low frequency and often of very short duration. A continuous time sampling or event sampling method may have captured the initiation of social behaviors that were evidenced on the individual learning curves. Further consideration for future research needs to be directed towards this question.

A further consideration concerns the provision of a means by which to change the incentive for performing the desired behavior from teacher produced consequences to the inherent enjoyment associated with the execution of the behavior. It may be that the choice of 'change agent' inherent in the response prompting continuum was not as powerful and efficient as first considered. Waiting until the child is already to the point of independent performance to start fading adult attention for behavior execution may be too late to break the bond built between teacher praise and behavior performance. The time to begin bringing the behavior under the stimulus control of the peer's behavior may be much earlier.

Gable et al. (1978) have considered it advisable to examine the acquisition and generalization of social responses under a system where the schedule of reinforcement delivery is systematically manipulated. Rather than reinforcing continuously for the appropriate behavior throughout the instructional prompt levels until the child can independently perform the task, it may be advisable to systematically decrease the amount of teache[illegible]on generated at each level of the response prompting conti[illegible] It is suggested for example, that at the physical prompt level of performance the child would initially be reinforced continuously for his efforts. As the child moves through the complete manipulation, manipulative prompt and minimal guidance phases however, reinforcement is put on an intermittent schedule. This schedule would be continued up through the remaining prompting levels. This procedure may be more effective in introducing the child to the naturally occurring consequences of the task including peer delivered contingencies that will maintain the behavior in a generalized setting.

Wehman, Abramson, and Norman (1977) have termed this strategy for training stimulus generalization 'contingency fading and the use of natural reinforcers'. By fading reinforcement contingencies during the initial stages of instruction the child has an increased opportunity to recognize the value of performing the behavior for a peer's consequences rather than the teacher's. This procedure is also highly advocated by Stokes and Baer (1977) as one of the most dependable of all generalization programming mechanisms.

Qualitative Changes in Free Play

The question of whether or not the instructional program was effective in bringing about changes in the quality of social interaction displayed in free play is complex. Quality of social interaction was referred to as an increase in the amount of time spent in the cooperative and coordinative levels of social interaction as opposed to the non reciprocal categories of compliance with association and association. As previously discussed however, there was virtually no change in the amount of time spent in social interaction during free play as a result of the instructional program.

Although the efforts of the instructional program were not reflected in a change in the quantity of social interaction in free play, there did appear to be a change in the quality of social play displayed in free play. Figures 17 to 20 suggest that the treatment effect did have some transfer to free play behavior, but identifying repeated trends across subjects was not possible. Each child behaved independently of the others. Subject five (Figure 19) for example had an increase in the use of coordination in his social play time, but to permit this increase a decrease of cooperative play occurred while an increase in association was also observed. Conversely subjects six, seven, and eight (Figures 19 and 20) had an anticipated shift upward along the social categories. Less time was spent in the non reciprocal roles of compliance with association and association and more time was spent in the categories of cooperation and coordination.

What became apparent from the figures was that in many cases the modification of the amount of time spent across the four social interaction categories between prebaseline and postbaseline corresponded to the category of interaction that the tasks receiving instruction fell under. In 67% of the cases there was an increase in the amount of time spent in the category of social interaction which received instruction. This percentage reflects an increase in time spent for 14 tasks, no change for 1 task and a decrease for 6 tasks. (Subject three [Figure 18] was excluded from this figure as the amount of social play displayed in free play was negligable. The 100% figure for compliance with association represents only one social interaction over four days of observation.) For example, subject one (Figure 17) received instruction in jumping on the trampoline holding hands. This has been classified as a task which involves compliance with association. Instruction was also received on two coordinative tasks, passing the puck to a partner and pedaling a tricycle with someone standing on the back. Corresponding changes in free play were reflected by increases in the amount of time spent in compliance with association and coordination. A similar pattern was also displayed by subject eight (Figure 20). However subject 5 (Figure 19) received instruction in two coordination tasks and one cooperative task. The free play time spent in social interaction demonstrated an increase in coordination only, with a small decrease in cooperation. In summary, instruction in social tasks did not provide a generalized increase in the sophistication of social behavior used in free play, but there did appear to be a more specific generalization. A correspondence between the category of social task receiving instruction and an increase in the amount of time spent in that category during the free play time spent in social interaction appears evident. This points out the importance of making an accurate prescription prior to the initiation of instruction.

The importance of making a good prescription is further emphasized in cases where instruction in social tasks resulted in a decrease in free play time spent in that social category of interaction. An overload effect may have been operating. Subject four (Figure 18) for example received instruction on two cooperative tasks: sharing the scooter and tube. After receiving intense instruction on two cooperative tasks the child may have been saturated with the concept of sharing and may rather have spent his free social time participating in other activities. Subject four showed a decrease in the amount of cooperation after instruction, but also a large increase in associative play which did not receive instruction. It may be important not to overload the child with one type of social task but provide the needed instruction in short intense sessions, permitting the child to get the idea of the social tasks to be learned without being overwhelmed.

CHAPTER VI

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

Summary

The purpose of the study was to determine the effects of an individualized instruction program on the social behavior of young moderately mentally retarded children. The study investigated questions pertaining to what to teach, how to teach, and the transfer of training from the treatment program to the free play patterns of the participants.

A free play assessment of eight children using an interval time sampling method showed that mentally retarded children spend approximately 8% of their free play time engaged in social interaction as defined by cooperation and coordination, with another child. This compares with the 40% displayed by non retarded children of approximately the same age. The percentage of time spent in play behavior of a social nature did not appear to increase with the age of the child.

Based on the free play assessment, the children were prescribed three social tasks in which they received individualized instruction. Using a multiple probe design across behaviors and replicated across subjects it was determined that the social tasks could be learned by the children. An analysis of the change in level of performance between the initiation of instruction and its termination indicated that the instructional model was instrumental in increasing the children's independent level of performance. All of the 17 tasks beginning instruction at the manipulative prompt level of teacher assistance achieved the verbal prompt level of achievement, while half of these reached the no prompt level of performance. The technique of teaching social skills with the assistance of a cooperating peer appears to be functional and efficient.

The response prompting continuum used in the Prep Program to teach gross motor skills, was modified to include an additional category of contingent attention. This proved to be an appropriate framework through which to shape the social behaviors during instruction. The trend of the individual learning curves gave indication that the instructional prompt of complete behavior demonstration however was not being systematically applied to all of the social tasks. Greater reliance may have to be placed on partial demonstrations and gestural prompts to overcome the difficulty of providing a complete demonstration while maintaining the instructional set.

Using an ABA design, the degree to which the acquired behaviors generalized to free play was assessed. There were no consistent changes in trend and/or level of social participation displayed during the treatment phase of the study over that displayed during the baseline conditions. An increase in the quantity of social behavior in free play as a result of participating in the instructional program did not occur.

A comparison of the prebaseline and postbaseline distribution of social play across the social interaction categories did show that a qualitative change in social participation may have occurred as a result of the instructional program. In 67% of the cases there was an increase in the amount of time spent in the social interaction category that corresponded with the category of social tasks receiving instruction. Although a generalized increase in the complexity of social interaction was not repeatedly observed, there did appear to be a correspondence between the social category under which instruction was received and an increase in that level of social participation during free play.

Conclusions

The investigation on the effects of an individualized instruction program on the social behavior of young moderately mentally retarded children gives support for the following conclusions.

1) Moderately mentally retarded children spend approximately one-quarter as much time in social interaction as their non retarded peers. Approximately 8% of the children's free play time was spent in social interaction as defined by cooperation and coordination.
2) The proposed teaching model was instrumental in the children's acquisition of the prescribed social behaviors as reflected by a change in level in the independent performance of the tasks before and after the instructional program.
3) The teaching behaviors as utilized in the Prep Program for teaching gross motor skills were appropriate for the teaching of social tasks as reflected in the trend of the children's performance. The instructional prompt of contingent attention requires further consideration to fully evaluate its worth.
4) Individualized instruction in specific social behaviors did not generalize to free play to produce an increase in the quantity of social interaction displayed.
5) Individualized instruction in specific social behaviors did

generalize to free play to produce a qualitative change in the social behavior displayed that corresponded to the categories of social tasks receiving instruction.

6) Individualized instruction in specific social behaviors did not produce a generalized increase in the sophistication of social behavior displayed during free play as indicated by a greater proportion of time being spent in the social categories of cooperation and coordination over the non reciprocal categories of compliance with association and association.

Recommendations

The following recommendations are suggested for further research in the area of social interaction of young moderately mentally retarded children.

1) Researchers and teachers must thoroughly address the question of target response selection. Tasks should be selected that have a high probability of resulting in a sustained and positive peer interaction.

2) Researchers should examine the acquisition and generalization of social responses where the schedule of reinforcement delivery is systematically faded from the initial teaching sessions.

3) The method of gathering free play data on social participation should be more fully investigated. Continuous time sampling or event sampling may prove to be more representative than interval time sampling.

4) An investigation into the instruction of social behaviors in

a group setting, incorporating more than two children in the instructional set is needed. Simple games may prove to be a useful tool.

5) Researchers should examine the possibility of incorporating the teaching of social skills and behaviors into existing curricula, taking advantage of environmental situations and cues, while still providing developmental programming for the children.

6) Further research efforts are needed to determine the value of the proposed instructional prompt of contingent attention.

7) Researchers should look carefully at the instructional category of visual prompt. Efforts are needed towards solving the dilemma between providing a complete demonstration and losing the child's attention to extraneous cues.

8) Further examination is needed to determine if a balance can be met between providing intense instruction on specific social behaviors while avoiding an overload of the task category such that the child avoids that level of social interaction during free play.

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APPENDIX A

OBSERVER AND TEACHER TRAINING INFORMATION

Sequence of Social Interaction Instruction
Response Prompting Continuum
Interaction Categories
Equipment Categories
Prescription Guidelines
Assessment Procedure
Graphing Code
Observer Coding Rules

SEQUENCE OF SOCIAL INTERACTION INSTRUCTION

LEVEL	INSTRUCTIONAL MODEL	RESPONSE LEVEL
1	TC - C	Physical Prompt
2	C - C T	Visual Prompt
3	C - C (T)	Verbal Prompt
4	C - C	No Prompt
5	C - C	Contingent Attention
6	C - C	Initiation in Free Play

RESPONSE PROMPTING CONTINUUM

PHYSICAL PROMPT	Complete Manipulation
	Manipulative Prompting
	Minimal Guidance
VISUAL PROMPT	Complete Behavior Demonstration
	Partial Behavior Demonstration
	Gestural Prompting
VERBAL PROMPT	Behavior Cue
	Behavior Mand
	Action Cue
NO PROMPT	Environmental Goal
	Imitative Initiation
CONTINGENT ATTENTION	Continuous
	Intermittent
INITIATION IN FREE PLAY	

RESPONSE PROMPTING CONTINUUM

PHYSICAL PROMPTS

Physical prompts include any kind of physical assistance in which the teacher actually touches the child's body or body parts. They may be preceded by a visual prompt, and should always be paired with a verbal prompt.

Complete Manipulation gives the child the greatest amount of assistance. The child's body is physically moved through the desired behavior. This usually involves all of the following:

1. positioning the child's body in an appropriate posture to begin the response
2. applying force to the child's limbs in the direction in which they are to move
3. continuing application of force until the response is completed

example: Place the handle of the wagon, which has someone in it, in the child's hand. With the teacher's hand held over the child's, they together pull the wagon forward.

example: With two children taking turns in jumping down, the second child is held back in the ready position by placing an arm across his chest or holding him at the hips until the first child has completed his jump and has cleared the jumping area.

example: With one object between two children, the teacher places his hands over one childs such that the object is passed and released to be received by the other child.

Manipulative Prompting is used when the child performs the response relying on the physical assistance of the instructor at some point in the response. This assistance may come at the beginning, at the end, or in the middle of the behavior. It may include:

1. manipulation of the child's total body or any body part into the correct position for the beginning of the behavior, or
2. providing assistance during the execution of a behavior so it is completed appropriately, or
3. manipulation of the child's body or any body part such that the behavior ends appropriately

example: Apply pressure to the knees of a child that is sitting on a tricycle that has another child on the back to start him moving.

example: Moving a child's arm such that the object he possesses is passed to another child.

example: Prying the rope from a child's hands as he passes it to another child at the end of a turn.

Minimal Guidance involves contacting the child's body to give direction or signal to the behavior that is desired. It may include:

1. tapping a body part to signal the child to move it
2. prodding the trunk or a body part to maintain movement
3. prodding to encourage a child to begin or complete a response

example: Teacher touches child's elbow, prompting him to pass a piece of equipment to another child.

example: Prodding at the hips of a child encouraging him to pull another child who is seated in the wagon.

VISUAL PROMPTS

Visual prompts include any kind of movement on the part of the teacher or peer that does not involve physical contact with the child receiving instruction. They are accompanied by a verbal prompt.

Complete Behavior Demonstrations are accurate, and often exaggerated demonstrations of the desired behavior with the apparatus or implement used. The demonstration may be given by the teacher or another child.

example: The teacher passes a scooter to another child and says, "we're sharing the scooter."

example: The teacher points to two children, one of which is pulling the other in a wagon and says, "they are working together."

Partial Behavior Demonstrations are accurate demonstrations of a component of the behavior. This may include:

1. giving a demonstration without the equipment
2. giving a demonstration at the start or end of the behavior

example: The teacher demonstrates offering a scooter to another child without the scooter.

example: The teacher places only one foot up onto the stand at the back of the tricycle.

Gestural Prompting involves the use of a gesture that does not represent part of the behavior or desired response but does serve to indicate that movement is expected.

example: The teacher taps the handle of the wagon where the child is to place his hand.

example: The teacher points to illustrate that the object is to be passed and released.

VERBAL PROMPTS

Verbal prompts are any words, sentences or sounds that tell the child to begin and to complete the behavior.

Behavior Cues serve to focus the child's attention to the key components required to complete the behavior, such as action words that describe a component of the behavior.

example: in wagon pulling - "give Craig a ride"
in sharing the rope - "pass the rope to Brian"
in taking turns on the slide - "wait until Susan is finished"

Behavior Mands provide a description of the desired behavior. They are specific terms that can be used in commands or questions.

example: "Can you two take turns?"
"Share the rope."
"Work together."

Action Cues are words that motivate the child to perform a given behavior. They are not descriptive of the behavior itself.

example: one, two, three, go!

example: are you ready?

NO PROMPT

The behavior is initiated in a free play situation by the children with no prompting or reinforcement from the teacher.

Environmental Goal. The teacher sets the situation so that the potential for an interaction exists. The behavior is encouraged but there is no communication with the child about the desired interaction.

example: Two children are sliding down the slide on individual scooters. The teacher explains that one scooter is needed somewhere else and takes one away.

Imitative Initiation. Two children perform the behavior after watching other children performing.

example: One child stops his tricycle and permits another to climb on the back after watching two children riding around the room together.

CONTINGENT ATTENTION

Contingent attention is any praise given for a child-initiated mutual interaction.

Continuous. Upon the completion of a child-initiated mutual interaction the teacher gives immediate praise for each trial.

example: One child has just let another climb into their wagon, pulls him ten feet and stops. The teacher follows the sequence and immediately reinforces the wagon pulling, either physically and/or verbally.

Intermittent. The teacher intermittently reinforces a child initiated mutual interaction. The external reinforcement is faded as the intrinsic nature of the behavior increases.

example: Two children may be sliding down the slide and sharing one scooter. The scooter has exchanged hands 5 times.

The teacher reinforced the first exchange and it was not until the sixth that the teacher again reinforced their behavior.

INITIATION IN FREE PLAY

The child performs the appropriate behavior in free play without the benefit of an environmental goal situation or a peer demonstration.

example: One child waits for the other to complete his slide and move away from the landing area before preceding himself.

INTERACTION CATEGORIES

1. Compliance With Association
    - 1.1 maintains activity
    - 1.2 complies with physical contact
    - 1.3 complies with assisting
2. Association
    - 2.1 physical contact
    - 2.2 assisting
3. Cooperation
    - 3.1 taking turns
    - 3.2 sharing
    - 3.3 leading/following
4. Coordination
5. Negative Behavior

INTERACTION CATEGORIES

1. COMPLIANCE WITH ASSOCIATION

A behavior is compliance with association if it is emitted, as defined below, within 3 seconds following another child's initiated behavior. An initiation is an associative behavior that has not been preceded by another behavior in the past 3 seconds.

1.1 Maintains Activity. The child agrees with or accepts the associative interaction of another, by tolerating an interruption to their own activity. For example, two children jumping actively on the trampoline are in association because of the reactive effect of each other on the trampoline bed. There is more than a mere awareness of the other child, there is an expression of pleasure in being associated with. They will go along with an associative interaction, attend to or allow the other child to join in or to take away from (modified from Leiter, 1977, p. 1290).

1.2 Complies With Physical Contact. The child accepts being deliberately touched by another child. The child agrees with or accepts the physical contact of another by tolerating an interruption to their own activity. For example, a single child who is jumping down, if when approached by another who takes hold of his hand so as to jump in pairs together continues to jump down, is complying with physical contact. The child will go along with physical contact, attend to or allow the other child to join in or to take away.

1.3 Complies With Assisting. The child agrees to be given assistance to complete a task. For example, a child who is sitting on a swing while being pushed from behind by another child is complying with assistance. In assistance there is a definite division of labour with the children engaged for some purpose.

2. ASSOCIATION

The child initiates an associative interaction that has not been preceded by another behavior within the past 3 seconds, with another child in a friendly, noncoercive manner.

2.1 Physical Contact. One child intentionally initiates physical contact with another child. For example, a child who approaches another who is sliding down the slide and wraps his legs around him from the back so that they now go down the slide together in a train fashion is initiating physical contact. Touching the other child in the form of a hug or kiss are also examples.

2.2 Assisting. The child physically assists another in completing a task. Physical assistance may be given in helping a child onto the trampoline, or holding the rope while another gets on. There is a definite division of labour with the children engaged for some purpose (modified from Jensen, 1978).

3. COOPERATION

Children reciprocally interact with each other in an activity which necessitates mutual participation. The individual child subordinates his interests to that of the group. All the members engage in a similar activity with no division of labour and no organization of the group (modified from Parten, 1932, p. 251).

3.1 Taking Turns. One child waits for another to complete their task before proceding themselves. Waiting for the slide to clear at the bottom before going down and waiting in line to jump down onto the crash mat are examples.

3.2 Sharing. Two or more children reciprocally offer and receive an object. Both children must simultaneously touch the material with one hand or pass the object between them by pushing, rolling or throwing it. Sharing may include concurrently using a single piece of equipment in an activity which requires mutual participation. Giving up a tricycle so another child can have a turn and two children going down the slide alternately with one scooter are examples (modified from Peck, Apolloni, Cooke, and Raver, 1978).

3.3 Leading/Following. Two or more children are involved in following one another on foot, or with pieces of equipment such as tricycles or wagons. The leader of the chase must be compliant with the activity, expressing pleasure in having a pursuer by looking back to check progress or smiling. The follower in turn is not intent on catching the leader, but in maintaining the leading/following activity.

4. COORDINATION

Two or more children mutually interact for the purpose of making some material product, or striving to attain some goal that individually could not be achieved. The efforts of one child supplement the others, with a division of labour and roles occurring. The control of the situation is in the hands of one or two members who direct the activities of the others. For example, one child pulling another in a wagon or one child pedalling a tricycle while the other stands behind (modified from Parten, 1932, p. 251).

5. NEGATIVE SOCIAL INTERACTION

Any behavior that interferes with another child working on his task. The initiated action must be nonproductive in that it does not assist either child in completing the task at hand (modified from Jensen, 1978).

Negative Physical Contact. Direct physical contact with another child in the form of hitting, biting, punching, pulling hair, kicking, etc. Indirect physical contact with another child through a piece of equipment, for example, hitting someone with a bat, is also negative physical contact.

Threat of Negative Physical Contact. Threat of direct or indirect negative physical contact with another child. For example, approaching a child with a raised bat or hand.

Restraining. Interfering with the child's progress by holding him with the arms, sitting on him, or lying on him.

Destroying or Terminating Activity. Destroying the construction of another child or interfering so as the activity is terminated . Knocking down a tower of blocks being worked on, or taking away bean bags that are being used for target throwing are examples.

EQUIPMENT CATEGORIES

BARS:

- metal bars suspended between two metal climbers and free standing stools
- wooden bar attached to multiple use climbing apparatus

BENCHES:

- 2 conventional wooden benches
- wooden planks secured horizontally between supports

CLIMBING APPARATUS:

- cargo rope suspended from frame of wooden climbing apparatus
- large A shaped metal climbers, 6 feet in height with rungs on two sides
- free standing stools, 3 feet high with rungs on 4 sides and padded tops
- platform areas, 3 feet wide by 5 feet long by 2.5 feet high
- multiple use wooden climbing assembly
- ladder attached to large wooden climbing apparatus
- metal ladder attached to A shaped metal climbers

CUBES:

- 3 hollow, 28 inch square plywood cubes with diamond and square cutouts in sides

FREE SPACE:

- open area in which there is no equipment, including the area covered by a 1 inch thick ensolite mat

HANGING EQUIPMENT:

- one thick, freely hanging climbing rope with knot at bottom, suspended from the ceiling
- one inflated tire tube suspended from the ceiling

MATS:

- 2 large crash mats, 8 inches thick, 5 by 8 feet in area
- large wedged shaped crash mat, 2 feet high at one end, 3 by 5 feet in area
- small area mats when being manipulated, i.e., not being used as protection for potentially hazardous free space area

SCOOTERS:

- one foot square platforms with 4 shephard casters

SLIDES:

- large metal surfaced slide extending down from large climbing apparatus
- wooden slide, 8 by 4 feet in area, extending down from platform area
- wooden planks elevated and secured at one end angling down to the floor

SMALL EQUIPMENT:

- includes balls, bats, hoops, bolsters, hockey sticks, pucks, skipping ropes, bean bags, roller skates, and romper bouncers

TRAMPOLINE:

- small in size for use by small children, with the springs protected by mats

TRICYCLES AND WAGONS:

- 5 various sized tricycles
- 1 bicycle with training wheels

- 1 self propel riding toy
- 1 pedal car
- 2 metal wagons of different sizes
- 1 plastic wagon

PRESCRIPTION GUIDELINES

Things to Consider:

1. What pieces of equipment do the children prefer to use?
2. Are the motor skills at a maintenance level?
3. What are the interaction preferences? Choose social tasks in categories displaying low frequencies of occurrence.
4. Are there negative behaviors that occur consistently on certain pieces of equipment?
5. Choose behaviors believed to be teachable within the short time slot of three weeks.
6. Use teacher discretion and consider those activities the child may enjoy.
7. Is the task manageable? For example, in taking turns on the trampoline it is difficult to maintain the situation so that the other children in the room are not interfering with the teaching efforts.
8. How long does the task take to complete? For a child who will work for only a short time it may be preferable to teach turn taking on scooters where the turn ends quickly as opposed to taking turns on the rope.
9. Teach those tasks that may be transferable to free play. Teaching the child to skip a rope that is turned by two other children may not be desirable in that the chances of three children organizing themselves in free play are low. Choose tasks of reasonable sophistication.
10. Be aware of the pieces of equipment being used by the other

teachers during instruction. Don't limit teaching potential by choosing a task where the equipment will be difficult to obtain.

INTERACTIVE BEHAVIOR ASSESSMENT

In assessing a social interaction behavior the amount of prompting or assistance required to complete the task falls within one of five categories. At each successive level there is an increasing amount of prompting and or guidance given to the child by the teacher.

VERBAL PROMPT

The assessment of an interaction behavior should begin with a verbal cue, either as a direct Behavior Mand (share the scooter with Brian), or as an indirect Behavior Mand (can you share the scooter with Brian?). If the child is near a piece of equipment the teacher should make use of the child's proximity to that piece of equipment at assessment time. The time may come however when the teacher must entice or physically steer a child to a piece of apparatus to complete assessment of a behavior.

If the child performs the appropriate behavior following the verbal cue on two trials without any further prompting or guidance, the teacher should consider the behavior to be at the Verbal Prompt level of performance.

VISUAL PROMPT

If after a repetition of the verbal cue the child does not respond within 3 - 5 seconds or gives an incomplete or incorrect response the teacher should give a Complete Behavior Demonstration. A Complete Behavior Demonstration is an accurate demonstration of the desired behavior following the Behavior Mand which provides a further prompt to the child. The behavior demonstration should always be paired with the Behavior Mand. An appropriate response indicates that the behavior is at the Visual Prompt level of performance and the assessment is terminated.

PHYSICAL PROMPT

If after a verbal cue and a behavior demonstration the child does not respond in 3 - 5 seconds or gives an incomplete or incorrect response, physical assistance should be given by the teacher. The physical prompt level of assessment should begin with Minimal Guidance.

MINIMAL GUIDANCE

Minimal Guidance involves contacting the child's body to give direction or signal to the behavior that is desired. It may include:

1. tapping a body part to signal the child to move it
2. prodding the trunk or a body part to maintain movement
3. prodding to encourage a child to begin or complete a response

If the child performs the appropriate behavior following the verbal cue and Minimal Guidance the assessment is complete and the response is recorded at the Minimal Guidance level of physical prompt. If the child does not respond within 3 - 5 seconds or gives an incomplete or incorrect response the teacher should give more physical assistance.

MANIPULATIVE PROMPT

Manipulative Prompting is used when the child performs the response but does so by relying on the physical assistance of the instructor at some point in the response. This assistance may come at the beginning, at the end, or in the middle of the behavior. It may include:

1. manipulation of the child's total body or any body part

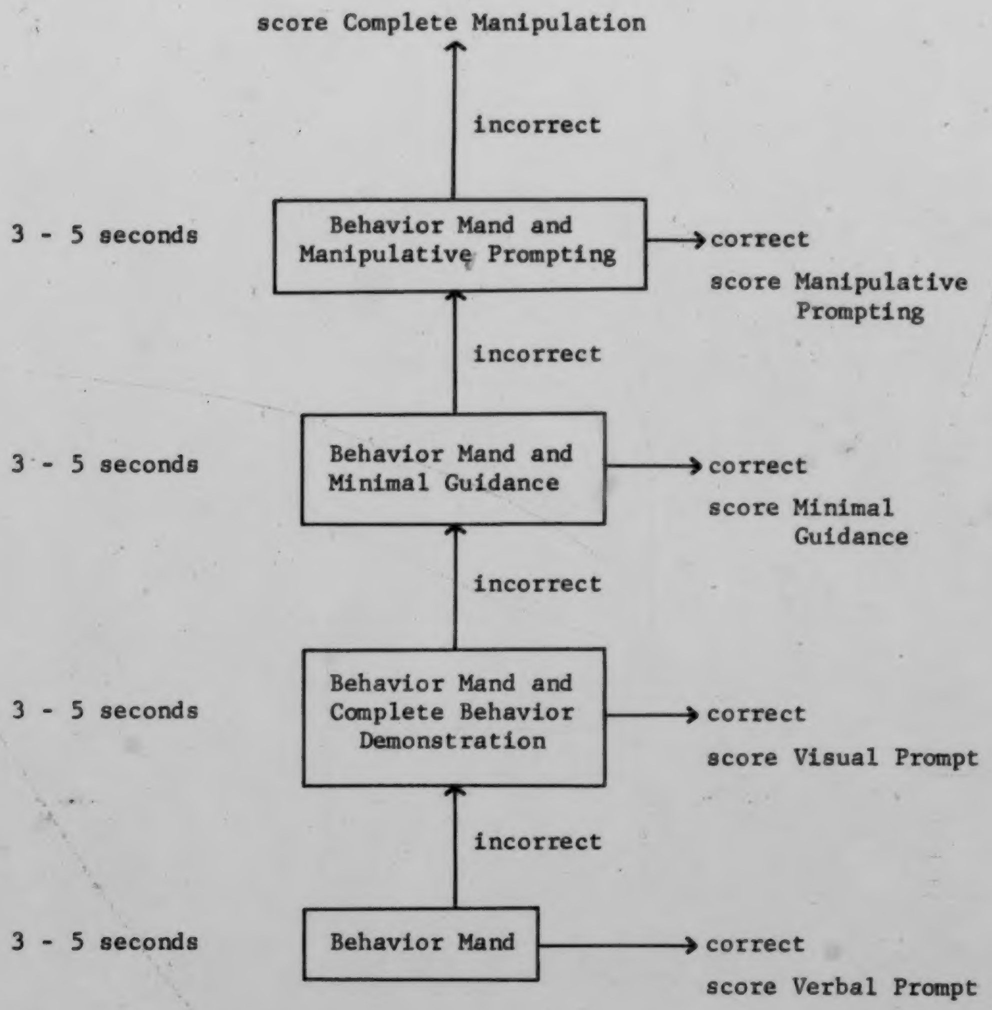
into the correct position for the beginning of the behavior

2. providing assistance during the execution of a behavior so it is completed appropriately, or
3. manipulation of the child's body or any body part such that the behavior ends appropriately

An appropriate response indicates that the behavior is at the Manipulative Prompt level of physical prompt. If the child does not respond within 3 - 5 seconds or gives an incomplete or incorrect response the teacher should consider the behavior to be at the Complete Manipulation level of physical prompting. Complete Manipulation gives the child the greatest amount of assistance. The child's body is physically moved through the desired behavior from the initial positioning until the response is completed.

The assessment should indicate what the child can and what he cannot do. In order to ensure that we know what the child can do and what he chooses to do at the time of the assessment it is suggested that two trials are necessary to demonstrate competence or lack of it.

The information from the assessment should be carefully recorded and dated for each child on the Daily Record Forms.



Assessment Procedure

GRAPHING CODE

○ child absent

■ child present but no instruction given

□ no program

● most typical performance level

▼ other levels of performance that occurred

OBSERVER CODING RULES

Code the most sophisticated behavior that occurs over the ten second interval.

Code negative behaviors that occur, plus any other defined behavior if it occurs within the same ten second interval.

Do not interact with the children; if they initiate interaction with you, terminate it as quickly as possible.

Number all the observations.

Check off observations of undefined behaviors in the 'other' category.

If the behavior observed entails the use of two pieces of equipment code the piece of equipment from which the behavior was initiated.

Code equipment that is held by the children even though it is not being actively used.

If the child was out of view for an observation, place a circle around the number of the observation.

If a child is constantly holding a piece of equipment in his hand and he intermittently interacts with another piece of equipment, code the other piece of equipment after the third observation.

If a child who is predominately using free space briefly uses another piece of equipment, code the other piece of equipment.

APPENDIX B

DATA COLLECTION FORMS

Free Play Observation Matrix
Free Play Inventory
Daily Record Form
Weekly Graph

FREE PLAY OBSERVATION MATRIX

Observer:
Date:
Subject:

	Bars	Benches	Climbing Apparatus	Cubes	Free Space	Hanging Equipment	Mats	Scooters	Slides	Small Equipment	Trampoline	Tricycles & Wagons
Maintains Activity												
Complies With Physical Contact												
Complies With Assisting												
Physical Contact												
Assisting												
Taking Turns												
Sharing												
Leading/Following												
Coordinating												
Negative												
Other												

FREE PLAY INVENTORY

STUDENTS				
LOCOMOTOR SKILLS				
Jumping Down				
PLAYROOM SKILLS				
Riding a Tricycle				
Jumping on a Trampoline				
Riding Scooter Down Incline, Sitting				
Swinging on a Rope				
PLAYGROUND SKILLS				
Sliding Down a Slide				
Swinging on a Swing				
OBJECT CONTROL SKILLS				
Throwing				
Passing a Puck				
Catching				
Rolling a Ball				

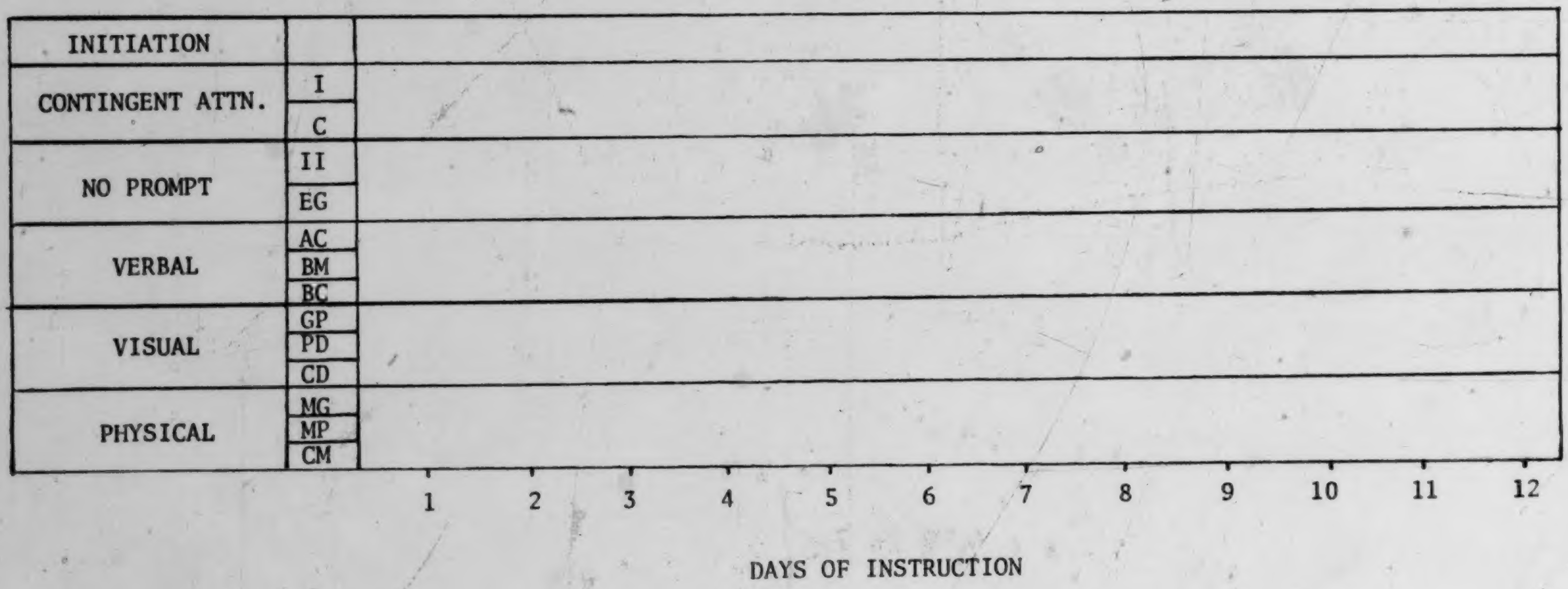
DAILY RECORD FORM

NAME:

SOCIAL TASK:

DATE	PROMPT	TIME/NUMBER	COMMENTS

NAME:
SOCIAL TASK:
DATE INSTRUCTION BEGAN:



APPENDIX C

SOCIAL INTERACTION BEHAVIORS

Compliance With Association
- Jumping down holding hands
- Jumping on the trampoline holding hands
- Sliding down the slide together
- Sliding down the slide on one scooter
- Being pushed on a swing

Association
- Pushing another child on the swing

Cooperation
- Sharing the scooter
- Sharing the rope
- Sharing the tube
- Sharing the tricycle
- Following on the tricycles

Coordination
- Riding on the back of a tricycle
- Pedaling a tricycle with someone standing on the back
- Rolling a ball between partners
- Passing a puck between partners
- Pulling a child in a wagon
- Throwing and catching between partners

INTERACTIVE BEHAVIOR: Jumping Down Holding Hands; given that two children are standing on top of a bench, they join hands and jump down together.

INTERACTIVE CATEGORY: Complies With Association (physical Contact)

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- teacher positions the two children side by side, brings their inside hands together and holds them together as the children jump down
Manipulative Prompting	- teacher brings children's inside hands together as they stand side by side so that the children jump down holding hands, or - once the children are holding hands the teacher places her hands over theirs and holds them together as the children jump
Minimal Guidance	- teacher taps child on the wrist to signal him to join hands with the other child
VISUAL PROMPT	
Complete Behavior Demonstration	- the child observers as the teacher holds hands with another child and jumps down - the child observes two other children hold hands and jump down

TASK SEQUENCE	INSTRUCTIONS
Partial Behavior Demonstration	- teacher takes hold of another child's hands and gets into the ready position without actually jumping down
Gestural Prompt	- the teacher points to the children's hands to illustrate that they are to be held together
VERBAL PROMPTS	
Behavior Cue	- "Hold hands" "Hold on tight" "Don't let go"
Behavior Mand	- "Jump down holding hands" "Jump together"
Action Cue	- "One, two, three, go"
NO PROMPTS	
Environmental Goal	- teacher brings two children together so that they are standing on a bench
Imitative Initiation	- the child watches two children jumping down holding hands, finds his own partner and starts jumping down, or joins the other two children

TASK SEQUENCE	INSTRUCTIONS
CONTINGENT ATTENTION	
Continuous	- reinforce every time the children jump down together
Intermittent	- reinforce every third time the children jump down together
INITIATION IN FREE PLAY	- the child finds another child to jump with without the influence of an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- teacher or child counts out loud to three so that the two children jump at the same time - more than two children can jump together to form a chain of children

INTERACTIVE BEHAVIOR: Jumping on the Trampoline Holding Hands; given that there are two children on the trampoline, they join hands and jump together

INTERACTIVE CATEGORY: Complies With Association (physical contact)

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPTS	
Complete Manipulation	- teacher stands beside trampoline, takes the two children's hands and places them together - teacher places her hands over children's and holds them together as they bounce on the trampoline
Manipulative Prompting	- teacher takes two children's hands and places them together so that the children jump holding hands - once the children are holding hands, the teacher places her hands over theirs and holds them together as the children bounce on the trampoline
Minimal Guidance	- teacher taps on the hand to signal the child to join hands with the other child
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher kneels beside other child on the trampoline, holds his hand and jumps

TASK SEQUENCE	INSTRUCTIONS
VISUAL PROMPTS	
	- teacher points to two children jumping on the trampoline holding hands and says, 'they are jumping on the trampoline holding hands'
Partial Behavior Demonstration	- teacher and another child demonstrate holding hands and jumping on the floor
	- teacher holds hands with another child on the trampoline but does not jump
Gestural Prompt	- the teacher points to the children's hands to illustrate that they are to be held together
VERBAL PROMPTS	
Behavior Cue	- "Hold hands" "Don't let go"
Behavior Mand	- "Jump on the trampoline holding hands"
Action Cue	- "One, two, three, go"
NO PROMPTS	
Environmental Goal	- bring two children together on the trampoline
Imitative Initiation	- if there are more than two children jumping on the trampoline clear all but two away

TASK SEQUENCE	INSTRUCTIONS
CONTINGENT ATTENTION	
Continuous	- reinforce every third jump
Intermittent	- reinforce only at the end of the jumping activity
INITIATION IN FREE PLAY	- child initiates jumping on the trampoline while holding hands with another child without any influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- teacher counts out loud as the children jump

INTERACTIVE BEHAVIOR: Sliding Down the Slide Together; given that there are two children at the slide they align themselves one behind the other and slide down the slide together.

INTERACTIVE CATEGORY: Complies With Association (physical contact)

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- place one child in front of the other with the back child's legs on the outside of the front child - place the arms of the back child around the waist of the front child - have the front child hold the legs of the back child - teacher holds them together as the children slide the length of the slide
Manipulative Prompting	- teacher puts children in the ready position and releases them as they travel down the slide, or - if the children are having problems holding onto each other once in motion the teacher may assist after they have attained the ready posiiton
Minimal Guidance	- tap the back child's limbs to indicate that his arms go around the other child's waist and his legs should be wrapped around the other child

TASK SEQUENCE	INSTRUCTIONS
Minimal Guidance	- tap the front child's arms to indicate that he should hold onto the back child's legs
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher slides down slide with another child - teacher points to two other children going down the slide and says, 'they are sliding together'
Partial Behavior Demonstration	- teacher demonstrates the ready position with another child - teacher illustrates the action of wrapping the legs around the other person
Gestural Prompt	- teacher points to the forward backward position each child is to assume at the top of the slide
VERBAL PROMPTS	
Behavior Cue	- "Hold on with your hands" "Put your legs up" "Don't let go"
Behavior Mand	- "Slide down together" "Make a train and slide down"
Action Cue	- "One, two, three, go"

TASK SEQUENCE	INSTRUCTIONS
NO PROMPTS	
Environmental Goal	- bring two children to the slide - tell the children that it they want to go down the slide they have to do it together
Imitative Initiation	- after observing two children sliding down the slide, the other finds his own partner or joins in
CONTINGENT ATTENTION	
Continuous	- reinforce every time the children slide down together
Intermittent	- reinforce every third time the children slide down together
INITIATION IN FREE PLAY	- child slides down the slide with another child with no influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- teacher may want to use a wide, low incline initially where manipulation is more manageable

INTERACTIVE BEHAVIOR: Sliding Down the Slide on One Scooter; given that there are two children at the slide with one scooter, they align themselves one behind the other so that the back persons legs are wrapped around the front person, and slide down the slide together

INTERACTIVE CATEGORY: Compliance with Association (physical contact)

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- place one child in front of the other with the back child's legs on the outside of the front child - place the arms of the back child around the waist of the front child - have the front child hold the back child's legs - teacher holds them together down the entire length of the slide
Manipulative Prompting	- teacher puts the children in the ready position and releases them as they travel down the slide or - if the children have problems holding on to each other once in motion the teacher may assist them after the children have attained the ready position
Minimal Guidance	- tap the back child's limbs to indicate that his arms should go around the other child's waist and his legs should be wrapped around

TASK SEQUENCE	INSTRUCTIONS
Minimal Guidance	- tap the front child's arms to indicate that he should hold onto the back child's legs
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher slide down the slide on scooter with another child - teacher points to two children going down slide on a scooter and says, "they are sliding together"
Partial Behavior Demonstration	- teacher demonstrates the different aspect of the ready position with another child
Gestural Prompt	- teacher taps scooter to indicate they are to get on - teacher points to other child to indicate they are to slide down together
VERBAL PROMPTS	
Behavior Cue	- "Hold on" "Sit on the scooter together" "Don't let go" "Put your legs up"
Behavior Mand	- "Slide down together with a scooter"
Action Cue	- "Okay, go"

TASK SEQUENCE	INSTRUCTIONS
NO PROMPTS	
Environmental Goal	- two children are sliding down slide together on seperate scooters, the teacher explains that one scooter is needed elsewhere and leaves the two children with one scooter - if two children are sliding down the slide without a scooter present them with one - if two children are idle, bring them to the slide and give them a scooter
Imitative Initiation	- after observing two children sliding down the slide on one scooter, the child finds his own partner to slide with or joins in
CONTINGENT ATTENTION	
Continuous	- reinforce every time the children slide down together
Intermittent	- reinforce every third time the children slide down together
INITIATION IN FREE PLAY	- child slides down the slide on one scooter with another child with no influence from an environmental goal situation or a peer demonstration

TASK SEQUENCE	INSTRUCTIONS
TEACHING SUGGESTIONS	- two scooters may be used instead of one

INTERACTIVE BEHAVIOR: Being Pushed on a Swing; given that there are two children at the swing, the seated child agrees to be pushed from behind

INTERACTIVE CATEGORY: Compliance with Association (assisting)

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- teacher seats child on the swing and places the child's hands on the ropes, teacher places her hands over the child's and holds them in place as the other child pushes the swing from behind or - if the child can hand on securely once on the swing the teacher places her arm across the child's lap ensuring that he remains seated while being pushed
Manipulative Prompt	- once the child seats himself on the swing the teacher prompts him at the elbows to hold onto the ropes and lightly places her arm across the child's lap prompting him to stay on the swing as the other child pushes from behind
Minimal Guidance	- teacher taps child's bottom indicating that he is to stay seated while the other child pushes the swing from behind

TASK SEQUENCE	INSTRUCTIONS
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher pushes another child on the swing from behind - teacher points to two children one of which is pushing another on the swing and says, "Johnny is letting Brian push him on the swing"
Partial Behavior Demonstration	- teacher stands behind another child who is correctly seated on the swing ready to be pushed
Gestural Prompt	- teacher taps seat of swing indicating where the child is to sit - teacher points to the other child indicating who is going to push him
VERBAL PROMPTS	
Behavior Cue	- "Hold on tight" "Stay on the seat" "Swing"
Behavior Mand	- "Let Brian push you on the swing"
Action Cue	- "Away you go"
NO PROMPTS	
Environmental Goal	- bring two children over to the swing and have one sit down

TASK SEQUENCE	INSTRUCTIONS
Environmental Goal	- if one child is at the swing alone bring another child over and ask them to use the swing together
Imitative Initiation	- after watching one child pushing another on the swing, he joins in and takes the place of the seated child or finds his own partner to push him from behind on the swing
CONTINGENT ATTENTION	
Continuous	- reinforce every second time the seated child permits the other child to give him a push
Intermittent	- reinforce only at the end of the swinging activity
INITIATION IN FREE PLAY	- one child permits another to push him from behind on the swing with no influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- teacher counts out loud the number of pushes received - ensure that the child doing the pushing does it gently - have the children change roles, the pushes and being pushed

INTERACTIVE BEHAVIOR: Pushing Another Child on the Swing; given that there are two children at the swing, the standing child agrees to push the seated child from behind.

INTERACTIVE CATEGORY: Association (assisting)

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPTS	
Complete Manipulation	- with the child seated in the swing, the teacher stands directly behind the other child with her hands over his and pushes the swing forward
Manipulative Prompt	- teacher stands behind child and prompts at the elbows so that an even and appropriate force is applied as the child pushes
Minimal Guidance	- teacher taps child's hand indicating that he is to push the other child
VISUAL PROMPTS	
Complete Behavior Demonstration	- teacher pushes another child on the swing - teacher points to two children, one of which is pushing another on the swing and says, "Johnny is pushing Brian on the swing"
Partial Behavior Demonstration	- teacher places her hands over the child's and shows where to push

TASK SEQUENCE	INSTRUCTIONS
Partial Behavior Demonstration	- teacher motions with her arms and hands the even arm action of pushing the swing
Gestural Prompt	- teacher points to the seated child's bottom or the seat of the swing
VERBAL PROMPT	
Behavior Cue	- "Push on his bum" "Be careful not to push too hard"
Behavior Mand	- "Push Johnny on the swing"
Action Cue	- "One, two, three, push"
NO PROMPTS	
Environmental Goal	- bring two children over to the swing and have one sit down
Imitative Initiation	- having watched two other children at the swing, the child takes a turn in assisting or finds his own partner to assist
CONTINGENT ATTENTION	
Continuous	- reinforce every second push the child gives
Intermittent	- reinforce only at the end of the assisting activity

TASK SEQUENCE	INSTRUCTIONS
INITIATION IN FREE PLAY	- one child pushes another who is seated on the swing from behind with no influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- teacher should ensure that the push is made to the seated child's bottom or the seat of the swing

INTERACTIVE BEHAVIOR: Sharing the Scooter; given that there are two children at the slide with one scooter, they at the end of their turn, pass the scooter to the other child.

INTERACTIVE CATEGORY: Cooperation (sharing)

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- teacher places her hands over the child's and passes and releases the scooter to the other child
Manipulative Prompt	- grasp the child's wrists and move the arms such that the scooter is passed to the other child
Minimal Guidance	- teacher taps the child's elbows prompting him to pass the scooter to the other child
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher passes the scooter to another child and says, "we are sharing the scooter" - teacher points to two children sharing the scooter
Partial Behavior Demonstration	- teacher demonstrates offering a scooter to another child without use of a scooter
Gestural Prompt	- teacher points to the other child to illustrate where the scooter is to be passed

TASK SEQUENCE	INSTRUCTIONS
VERBAL PROMPTS	
Behavior Cue	- "Pass the scooter to Brian" "Let go of the scooter"
Behavior Mand	- "Share the scooter" "Can you share the scooter with Johnny?"
Action Cue	- "Okay, do it"
NO PROMPTS	
Environmental Goal	- two children are sliding down the slide on individual scooters, the teacher explains that one scooter is needed elsewhere and takes one away - two children are sliding down the slide on their seats, teacher presents them with one scooter
Imitative Initiation	- a child sees another child give someone his scooter and he too then shares his scooter
CONTINGENT ATTENTION	
Continuous	- reinforce every time the scooter is passed to another child
Intermittent	- reinforce every third time the scooter is passed to another child

TASK SEQUENCE	INSTRUCTIONS
INITIATION IN FREE PLAY	- child shares his scooter with another child without an influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- once the child has passed the scooter have him wait until the other child has finished his turn so that he may be passed the scooter. Repeat this sequence several times

INTERACTIVE BEHAVIOR: Sharing the Rope; given that there are two children at the rope, one child upon completion of his turn passes the rope to another child who has been waiting.

INTERACTIVE CATEGORY: Cooperation

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- teacher places her hands over the child's and helps the child pass and release the rope to the other child
Manipulative Prompting	- gently push the child's shoulder, elbow, or wrist towards the other child so that he receives the rope
Minimal Guidance	- tap the child's hand to get him to release the rope - tap the child's shoulder, elbow or forearm assisting him in initiating the pass
VISUAL PROMPTS	
Complete Behavior Demonstration	- teacher passes the rope to another child and says, "we are sharing the rope"
Partial Behavior Demonstration	- teacher demonstrates passing the rope without actually using the rope
Gestural Prompt	- teacher points to the other child to illustrate that the rope is to be passed to him

TASK SEQUENCE	INSTRUCTIONS
VERBAL PROMPTS	
Behavior Cue	- "Pass the rope to Johmmy" "Let go of the rope" "Give the rope to Johnny"
Behavior Mand	- "Share the rope" "Can you two share the rope"
Action Cue	- "Are you ready?" "You do it"
NO PROMPTS	
Environmental Goal	- if the child is swinging on the rope by himself, bring another child over and suggest they play together - suggest that the rope is off limits unless two children play with it together
Imitative Initiation	- two other children are sharing the rope, another child approaches them and joins in by also taking his turn
CONTINGENT ATTENTION	
Continuous	- reinforce every time the child passes the rope to the other child
Intermittent	- reinforce every third time the rope is passes to the other child

TASK SEQUENCE	INSTRUCTIONS
INITIATION IN FREE PLAY	- one child shares the rope with another child without the influence of an environmental goal or a peer demonstration
TEACHING SUGGESTIONS	- once the child has passed the rope have him wait until the other child is finished his turn so that he may be passed the rope. Repeat this sequence several times. - teacher may initially have to end the child's turn by stopping movement of the rope so that instruction in sharing the rope can proceed. - tell each child that after four swings on the rope his turn is over and he must share the rope with the other child - have the children count out loud the number of swings for each other

INTERACTIVE BEHAVIOR: Sharing the Tube; given that there are two children at the suspended tube, one child at the completion of his turn gives up the tube to another who is waiting.

INTERACTIVE CATEGORY: Cooperation

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- teacher lifts child out of the tube and holds him back as the second child has his turn
Manipulative Prompt	- touch the child lightly on the shoulders lifting up indicating that his turn is over. Hold him at the shoulder to indicate that he must wait as the other child gets on for his turn.
Minimal Guidance	- tap the child on the shoulder to indicate it is time to share the tube
VISUAL PROMPTS	
Complete Behavior Demonstration	- teacher swings on the tube and gives it up to another child saying, "we are sharing the tube" - teacher points to two other children who are sharing the tube

TASK SEQUENCE	INSTRUCTIONS
Partial Behavior Demonstration	- teacher, who has the tube in her hands, gives it up to another child
Gestural Prompt	- teacher points to the other child to indicate it is his turn
VERBAL PROMPTS	
Behavior Cue	- "Now it is Johnny's turn" "Get off of the tube" "You can have another turn soon" "Are you going to let Johnny have a turn now?"
Behavior Mand	- "Share the tube with Brian" "Can you share the tube with Brian?"
Action Cue	- "Come on, do it"
NO PROMPTS	
Environmental Goal	- bring two children together at the tube and explain that there is only one tube for everyone and suggest they play together
Imitative Initiation	- having watched two children sharing the tube the child joins in and waits his turn, or finds his own partner to share with

TASK SEQUENCE	INSTRUCTIONS
CONTINGENT ATTENTION	
Continuous	- reinforce every time the child gives the tube up to another child
Intermittent	- reinforce only at the end of the sharing activity
INITIATION IN FREE PLAY	- the child shares the tube with one or more children with no influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- once the child has given up the tube have him wait until the other child has finished his turn so that he may be given the tube. Repeat this sequence several times. - the teacher may initially have to end the child's turn by stopping movement of the tube so that instruction in sharing the tube may proceed - tell each child that after 4 swings on the tube their turn is over and he must share the tube with another child - have the children count each others swings out loud

INTERACTIVE BEHAVIOR: Sharing the Tricycle; given that a child is seated on a tricycle, upon being approached by another child requesting a turn, the child gets off of the tricycle so as to let the other child get on.

INTERACTIVE CATEGORY: Cooperation

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- teacher picks child up off of the tricycle and holds him back so that the other child can get on
Manipulative Prompting	- the teacher pushes or lifts lightly at the child's shoulder's or bottom indicating that he is to get off of the tricycle
Minimal Guidance	- teacher taps the child's hands prompting him to let go of the handle bars, or prompts his bottom indicating that he is to get off
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher gets off of a tricycle and lets another child get on saying, "we are sharing the tricycle" - teacher points to two children who are exchanging a tricycle
Partial Behavior Demonstration	- the teacher offers a tricycle to another child
Gestural Prompt	- teacher points to the other child to indicate that he would like a turn

TASK SEQUENCE	INSTRUCTIONS
VERBAL PROMPTS	
Behavior Cue	- "Let go of the handle bars" "Get off of the tricycle"
Behavior Mand	- "Share the tricycle" "Can you share the tricycle with Johnny?"
Action Cue	- "Come on, do it"
NO PROMPTS	
Environmental Goal	- two children are playing together using seperate tricycles, teacher explains that one tricycle is needed elsewhere and leaves the two children with one - set up the equipment in the room such that a child riding a tricycle has to come to a stop where another child could be waiting for a turn
Imitative Initiation	- child shares his tricycle with another after watching two children share a tricycle
CONTINGENT ATTENTION	
Continuous	- reinforce every time the children share a tricycle
Intermittent	- reinforce every second time the children share a tricycle

TASK SEQUENCE	INSTRUCTIONS
INITIATION IN FREE PLAY	- the child stops his tricycle and gets off to give another child a turn with no influence from an environmental goal situation or a peer demonstration

INTERACTIVE BEHAVIOR: Following on the Tricycles; given that there are two children on seperate tricycles, one child leads while the other follows for a distance of 12 meters.

INTERACTIVE CATEGORY: Cooperation

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- with the child seated on the tricycle, the teacher stands with one foot on the back of the tricycle pushing with the other foot and she places her hands over the childs steering the tricycle to follow the other child
Manipulative Prompt	- stand beside the child on the tricycle and place your hand lightly on top of his to steer the handle bars so that he follows another child on a tricycle
Minimal Guidance	- place one of your hands lightly on the child's back and apply pressure so that the child will follow another child on a tricycle
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher rides the tricycle and follows another child saying, "I'm following Dave on the tricycle"

TASK SEQUENCE	INSTRUCTIONS
Complete Behavior Demonstration	- teacher points to two children following one another on the tricycles
Partial Behavior Demonstration	- with one child seated on the tricycle, with the teacher behind on her tricycle, she makes the initial movements towards following the leader as he pulls away
Gestural Prompt	- teacher points to the other child on the tricycle to illustrate that he is to follow him
VERBAL PROMPTS	
Behavior Cue	- "Stay close together" "Don't let Brian get away" "Go faster and catch up"
Behavior Mand	- "Follow Brian on the tricycle"
Action Cue	- "Away you go"
NO PROMPT	
Environmental Goal	- set up a narrow path with the equipment so that the children must go single file and follow one another to get past the obstacles

TASK SEQUENCE	INSTRUCTIONS
Imitative Initiation	- a child sees another child following a peer on a tricycle and joins in or finds his own partner
CONTINGENT ATTENTION	
Continuous	- follow the children as they travel around the room and reinforce every few feet
Intermittent	- reinforce only at the end of the leading/following activity
INITIATION IN FREE PLAY	- the child initiates following another on a tricycle without any influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- tie a rope between the tricycles so that the cooperating child doesn't get too far ahead of the other child

INTERACTIVE BEHAVIOR: Riding on the Back of a Tricycle; given that there are two children and one tricycle, the standing child agrees to stand on the back of the tricycle and be given a ride by the seated child.

INTERACTIVE CATEGORY: Coordination

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- with a child sitting on the tricycle ready to pedal the teacher has the other child stand on the back of the tricycle and place his arms around the waist or shoulders of the other child. Hold the child from the back so he maintains this position as the tricycle moves forward.
Manipulative Prompting	- guide the child to the tricycle, once he is standing on the back prompt him at the elbows to hold on to the other child, or - guide the child to the tricycle, and prompt him at the knees to stand on the back of the tricycle
Minimal Guidance	- tap the child's hands indicating that he must hold the other child's waist to stay on, or - tap the child's foot indicating that he is to get onto the tricycle

TASK SEQUENCE	INSTRUCTIONS
VISUAL PROMPTS	
Complete Behavior Demonstration	- teacher gets on the back of a tricycle and holds on whild the other child pedals a short distance - teacher points to two children riding on one tricycle
Partial Behavior Demonstration	- teacher stands on back of tricycle holding onto seated child without the tricycle moving forward or, - teacher demonstrates standing on back of tricycle without holding onto the child's waist or, - teacher demonstrates holding onto the child's waist without standing on the back of the tricycle
Gestural Prompt	- teacher points to where the child's feet should be placed - teacher points to other child's waist to indicated where to hang on
VERBAL PROMPTS	
Behavior Cue	- "Hold onto Johnny's waist" "Stand on the back of the tricycle"
Behavior Mand	- "Let Brian give you a ride on the back of the tricycle" "Ride on the back of the tricycle"
Action Cue	- "Away you go"

INTERACTIVE BEHAVIOR: Pedaling a Tricycle with Someone Standing on the Back; given that there are two children and one tricycle, the person seated on the tricycle gives the person who is standing on the back a ride.

INTERACTIVE CATEGORY: Coordination

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- with one child seated on the tricycle the teacher holds the tricycle still while the other child stands on the back - teacher pushes down on the seated child's knees so that the tricycle moves forward or, pushes the tricycle forward by pushing on the tricycle seat ensuring that the seated child's feet stay on the pedals
Manipulative Prompt	- teacher gently touches the seated child's knees indicating that he is to pedal the tricycle forward
Minimal Guidance	- teacher places her hand on seated child's back prompting him to pedal the tricycle
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher points to two children on one tricycle, one of which is pedaling as the other stands on the back

TASK SEQUENCE	INSTRUCTIONS
NO PROMPT	
Environmental Goal	- if two children are riding on seperate tricycles explain that one is needed elsewhere and suggest they both play with one tricycle
Imitative Initiation	- having watched two children riding on one tricycle, the child climbs onto the back of another tricycle
CONTINGENT ATTENTION	
Continuous	- follow the children as they travel around the room and reinforce every few feet
Intermittent	- reinforce only at the end of the tricycle activity
INITIATION IN FREE PLAY	- child gets on the back of a tricycle and goes for a ride with no influence from and environmental goal situation or a peer demonstration

TASK SEQUENCE	INSTRUCTIONS
	- teacher pedals the tricycle with another child standing on the back
Partial Behavior Demonstration	- teacher stands on the back of the tricycle illustrating the ready position without the tricycle moving forward
Gestural Prompt	- teacher points to the other child who would like a turn
VERBAL PROMPT	
Behavior Cue	- "Let Brian get on the back" "Start pedaling"
Behavior Mand	- "Give Johnny a ride on the back of your tricycle"
Action Cue	- "Away you go" "One, two, three"
NO PROMPT	
Environmental Goal	- if two children are riding seperate tricycles, explain that one is needed elsewhere and suggest they both use one tricycle - if two children are idle present them with one tricycle
Imitative Initiation	- after watching two children travel on one tricycle, the child stops his tricycle and allows another child to stand on the back to be given a ride

TASK SEQUENCE	INSTRUCTIONS
CONTINGENT ATTENTION	
Continuous	- follow the children as they travel around the room and reinforce every few feet
Intermittent	- reinforce only at the end of the tricycle activity
INITIATION IN FREE PLAY	- the child seated on the tricycle gives another child who is standing on the back a ride with no influence from an environmental goal situation or a peer demonstration

INTERACTIVE BEHAVIOR: Rolling a Ball Between Partners; given that there are two children sitting on the floor facing each other with their legs outstretched, they roll a ball back and forth.

INTERACTIVE CATEGORY: Coordination

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- teacher positions child into a V sitting position - sitting behind the child the teacher places her hands over his and pushes the ball so that it is passed to the other child
Manipulative Prompt	- gently prompt at the child's elbows so that he rolls the ball forward to his partner
Minimal Guidance	- tap the child's elbow or hands to signal him to roll the ball
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher rolls the ball to another child and says, "we are playing ball together" - teacher points to two children rolling the ball back and forth between themselves
Partial Behavior Demonstration	- teacher motions rolling the ball to the other child without actually using the ball

TASK SEQUENCE	INSTRUCTIONS
Partial Behavior Demonstration	- teacher motions rolling the ball to the other child without actually releasing the ball
Gestural Prompt	- teacher points to the other child to illustrate that the ball is to be rolled to him - teacher points to the ball to indicate that it is to be rolled
VERBAL PROMPTS	
Behavior Cue	- "Pass the ball" "Catch the ball" "Pass the ball right to Brian"
Behavior Mand	- "Roll the ball back and forth with Johnny" "Play ball together"
Action Cue	- "Are you ready?" "One, two, three, go"
NO PROMPT	
Environmental Goal	- position the children into a V sit across from each other and give one child a ball
Imitative Initiation	- the child watches two other children rolling the ball back and forth and finds his own partner or joins the other two children

TASK SEQUENCE	INSTRUCTIONS
CONTINGENT ATTENTION	
Continuous	- reinforce every time the child rolls and catches the ball
Intermittent	- reinforce every third time the child rolls and catches the ball
INITIATION IN FREE PLAY	- the child finds his own ball and partner and they roll the ball back and forth with no influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- keep the children close together initially

INTERACTIVE BEHAVIOR: Passing a Puck Between Partners; given that there are two children each with a hockey stick, they pass the puck back and forth.

INTERACTIVE CATEGORY: Coordination

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- teacher positions the two children so that they are facing each other - teacher places her hands over the child's which are holding onto the hockey stick and helps to aim and hit the puck to the other child
Manipulative Prompt	- gently push the child's shoulders, elbows, or forearms to assist him in passing the puck to the other child
Minimal Guidance	- tap the child's elbow, forearm or wrist in order to signal him to hit the puck to the other child
VISUAL PROMPTS	
Complete Behavior Demonstration	- teacher passes the puck back and forth with another child - teacher points to two other children who are passing the puck and says, "they are playing hockey together"

TASK SEQUENCE	INSTRUCTIONS
Partial Behavior Demonstration	- teacher motions to hit the puck to the other child, but uses only a stick with no puck - teacher motions to hit the puck to the other child, but uses neither a stick or puck
Gestural Prompt	- teacher points to the other child to illustrate where the puck is to be hit
VERBAL PROMPTS	
Behavior Cue	- "Pass the puck to Johnny" "Shoot" "Stop the puck"
Behavior Mand	- "Play hockey with Brian"
Action Cue	- "Are you ready for the puck?" "Here we go"
NO PROMPT	
Environmental Goal	- give two idle children a hockey stick each and one puck - if two children are playing seperately with a hockey stick and puck, bring them together and remove one of the pucks

TASK SEQUENCE	INSTRUCTIONS
Imitative Initiation	- having watched two children playing hockey, the child finds another child to play hockey with or joins the two other children
CONTINGENT ATTENTION	
Continuous	- reinforce every time the child passes and receives the puck
Intermittent	- reinforce every third time the child passes and receives the puck
INITIATION IN FREE PLAY	- the child passes a puck to a partner without any influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- position the children between two benches - keep the children close together initially

INTERACTIVE BEHAVIOR: Pulling a Child in a Wagon; given that there are two children and a wagon, one child pulls the other who is sitting in the wagon.

INTERACTIVE CATEGORY: Coordination

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- teacher places the wagon handle in the child's hand and with her hand held over the child's they pull the other child in the wagon
Manipulative Prompt	- place the handle of the wagon in the child's hand or, - if the child picks up the handle, take the child's free hand and pull the wagon together
Minimal Guidance	- prompt the child at the hips to encourage him to pull the other child in the wagon - tap the child's hand to signal him to pick up the handle of the wagon
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher points to two children, one of which is pulling the other in the wagon

TASK SEQUENCE	INSTRUCTIONS
Complete Behavior Demonstration	- teacher pulls a child in a wagon and says, "I'm giving Johnny a ride"
Partial Behavior Demonstration	- teacher demonstrates picking up the handle of the wagon with another child in it
Gestural Prompt	- teacher taps the handle of the wagon indicating that he is to pick it up and pull the wagon
VERBAL PROMPTS	
Behavior Cue	- "Pull the wagon" "Hold onto the handle" "Pick up the handle"
Behavior Mand	- "Give Johnny a ride in your wagon" "Can you give Brian a ride in your wagon?"
Action Cue	- "Are you ready?" "Away you go"
NO PROMPTS	
Environmental Goal	- two children are pulling seperate wagons around the room, explain the one wagon is needed elsewhere and ask them to use the one together

TASK SEQUENCE	INSTRUCTIONS
Imitative Initiation	- after watching one child pull another in a wagon, the child finds someone who would like a ride in his wagon
CONTINGENT ATTENTION	
Continuous	- follow the children as they travel around the room and reinforce every few feet
Intermittent	- reinforce only at the end of the wagon pulling activity
INITIATION IN FREE PLAY	- the child pulls another child in a wagon without any influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- the child in the wagon should be light enough to be pulled with ease

INTERACTIVE BEHAVIOR: Throwing and Catching Between Partners; given that there are two children and one ball, they face each other and throw the ball back and forth.

INTERACTIVE CATEGORY: Coordination

TASK SEQUENCE	INSTRUCTIONS
PHYSICAL PROMPT	
Complete Manipulation	- teacher places her hand over the child's to ensure that the child passes and releases the ball to the other child
Manipulative Prompt	- place the child's arm in the over hand throwing position and have him release the ball
Minimal Guidance	- tap the child's hand or elbow to encourage him to throw the ball
VISUAL PROMPT	
Complete Behavior Demonstration	- teacher passes the ball to another child and says, "I'm throwing the ball to Johnny so he can catch it" - teacher points to two children throwing a ball back and forth between themselves
Partial Behavior Demonstration	- teacher goes through the throwing action without a ball while facing the other child

TASK SEQUENCE	INSTRUCTIONS
Gestural Prompt	- teacher points to the ball to indicate what is to be thrown - teacher points to the other child to indicate where the ball is to be thrown
VERBAL PROMPTS	
Behavior Cue	- "Throw the ball to Johnny" "Catch the ball"
Behavior Mand	- "Can you throw the ball back and forth?" "Play ball with Brian" "Can you play ball together?"
Action Cue	- "Are you ready?" "Watch the [illegible]"
NO PROMPT	
Environmental Goal	- if two children are playing with seperate balls explain that one is needed elsewhere and suggest the children play together - if two children are idle, present them with one ball
Imitative Initiation	- having watched two other children throwing and catching the child joins in or finds his own partner

TASK SEQUENCE	INSTRUCTIONS
CONTINGENT ATTENTION	
Continuous	- reinforce each time the ball is thrown and caught
Intermittent	- reinforce every third time the ball is thrown and caught
INITIATION IN FREE PLAY	- the child throws the ball to another child who is waiting to catch it without an influence from an environmental goal situation or a peer demonstration
TEACHING SUGGESTIONS	- keep the children close together at first